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Woods Hole Oceanographic Institution



Gulf Stream Recirculation Experiment – Part II

by

C.M. Wooding, W. B. Owens,
M.E. Zemanovic and J. E. Valdes

September 1989

Technical Report

Funding was provided by the National Science Foundation under
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Department of Physical Oceanography

Gulf Stream Recirculation Experiment — Part II

Christine M. Wooding
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and
James R. Valdes

June 13, 1989

Abstract

This report presents trajectories and time series of velocity, pressure, and temperature for twelve neutrally-buoyant floats launched during the Gulf Stream Recirculation EXperiment (GUSREX) and two from earlier experiments, that continued to operate after May 1982. These float data were obtained from Autonomous Listening Stations (ALSs) deployed from May 1982 to August 1985.

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1 Background

Twelve neutrally-buoyant, SOund Fixing And Ranging (SOFAR) floats launched between April 1980 and August 1981 as part of the Gulf Stream Recirculation EXperiment (GUSREX) continued to work after the first two years of the experiment reported by Kennelly and McKee (1984). In addition, two floats, one launched in October 1976 over the Nares Abyssal Plain as part of POLYMODE and another launched in June 1979 as part of an earlier Gulf Stream experiment also were heard after May 1982. This report presents the trajectories and time series of temperature, pressure, and velocity for these fourteen floats. GUSREX part II coverage of the Northwest Atlantic Ocean lasted for 33 months and then was supplemented by an array of five ALSs deployed to track SOFAR floats launched in the close vicinity of 34°N, 70°W (Site L, Price *et al.*, 1987) (Figure 1).

The GUSREX program, including the Site L coverage, lasted nearly five-and-a-half years. GUSREX was a joint program of Woods Hole Oceanographic Institution and the University of Rhode Island. It focused on the recirculation of the Gulf Stream, addressing such questions as the size and structure of the recirculation south of the Gulf Stream as proposed by Worthington (1976) and the interconnection of the Gulf Stream and the North Atlantic Current at the tail of the Grand Banks (Worthington, 1976; Clarke *et al.*, 1980). As part of GUSREX, a total of forty-three floats was launched along 55°W from 24 to 44°N during two cruises in April-May 1980 and July-August 1981 (Kennelly and McKee, 1984). Except for one case, these floats were launched in pairs with one float ballasted to 700 m and the other to 2000 m (see Figures 2, 3, 4 and 5). Twelve of these floats, five shallow and seven deep, are presented in this report. Table I shows the duration and start and end locations for each float

GUSREX EXPERIMENT AUG 1981 – SEPT 1985

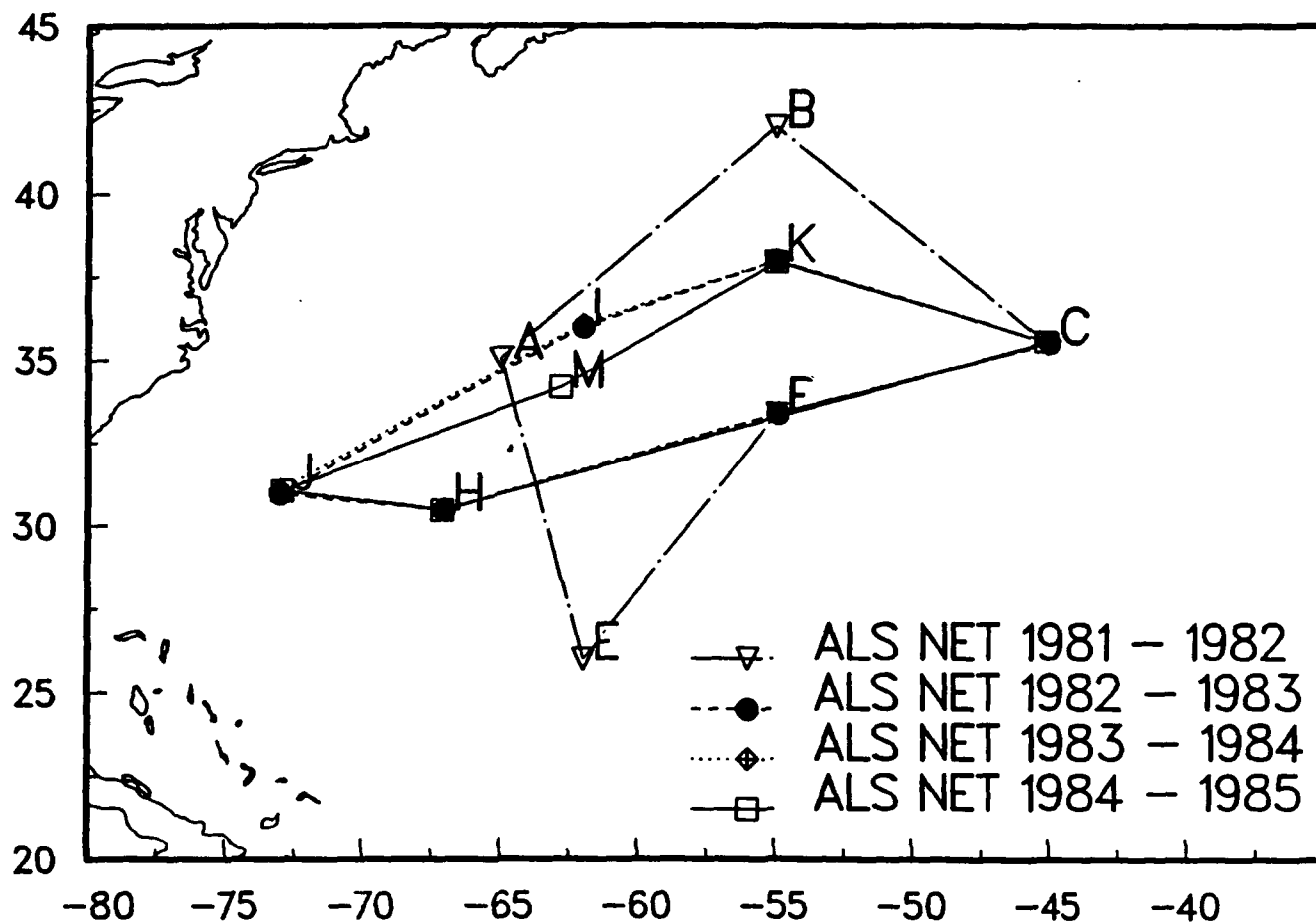


Figure 1: ALS tracking arrays for duration of GUSREX Site L Experiment.

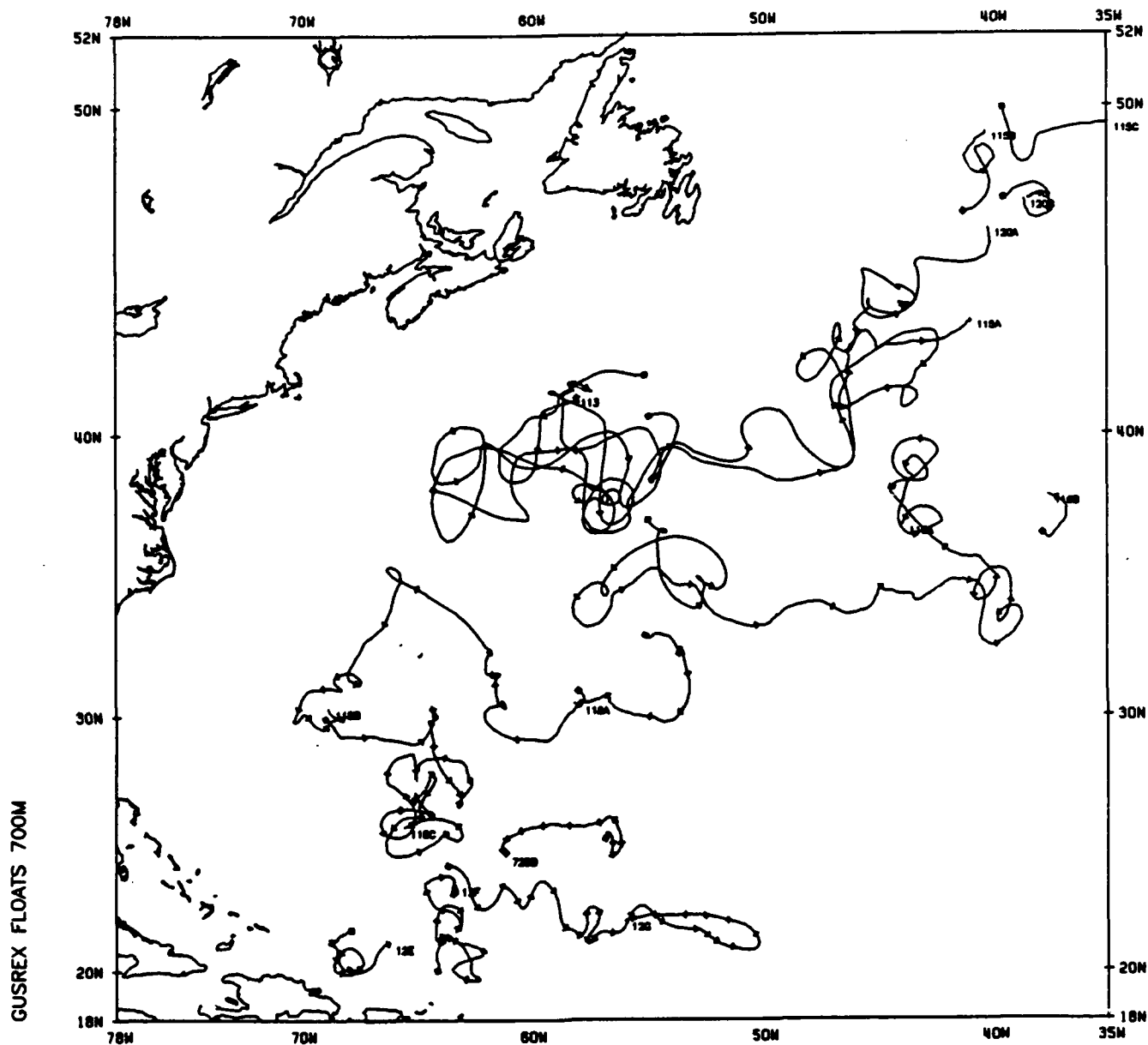


Figure 2: Composite 700-meter trajectories for floats covered in this report. Arrowheads mark every thirtieth day.

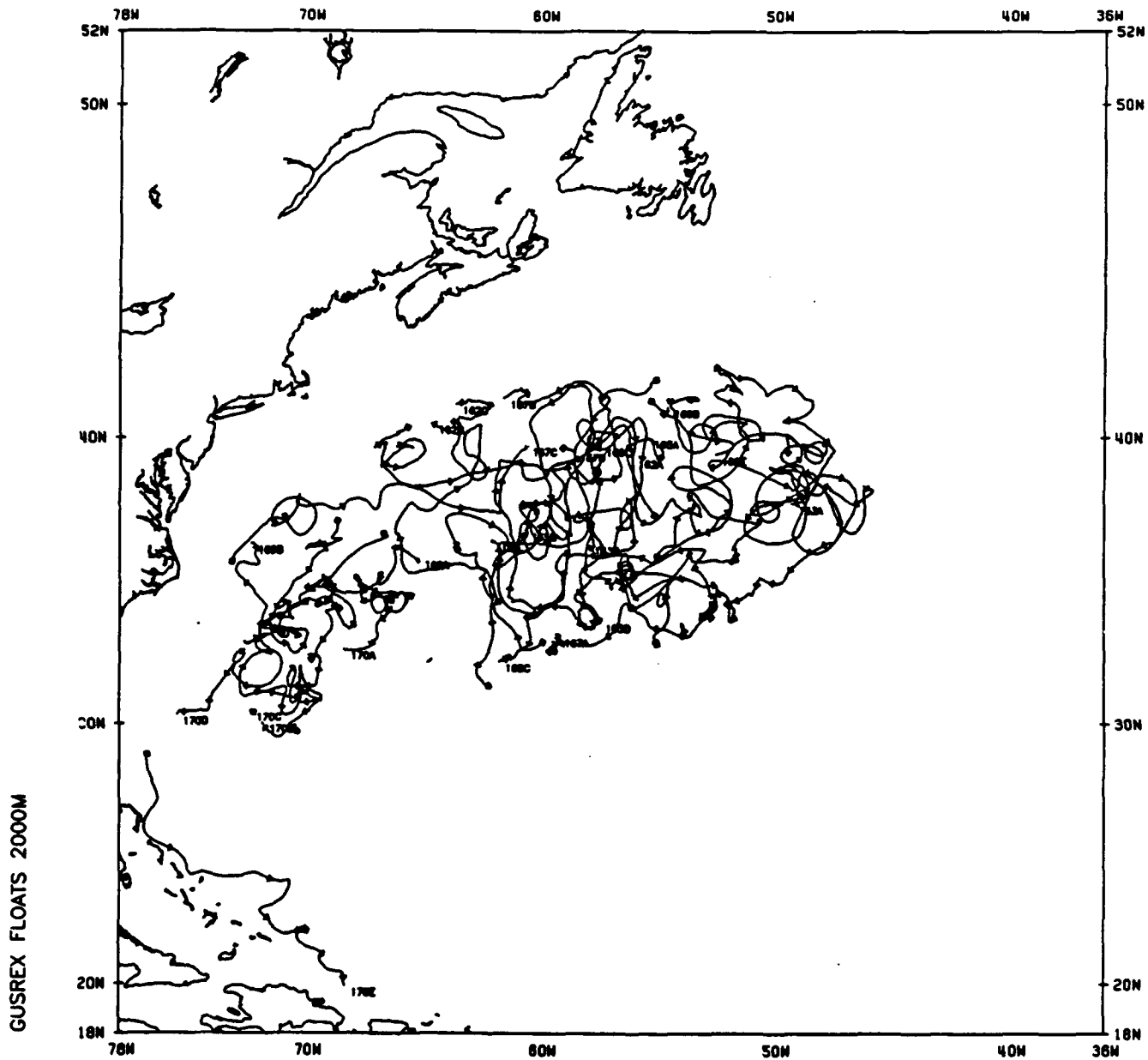


Figure 3: Composite 2000-meter trajectories for floats covered in this report. Arrowheads mark every thirtieth day.

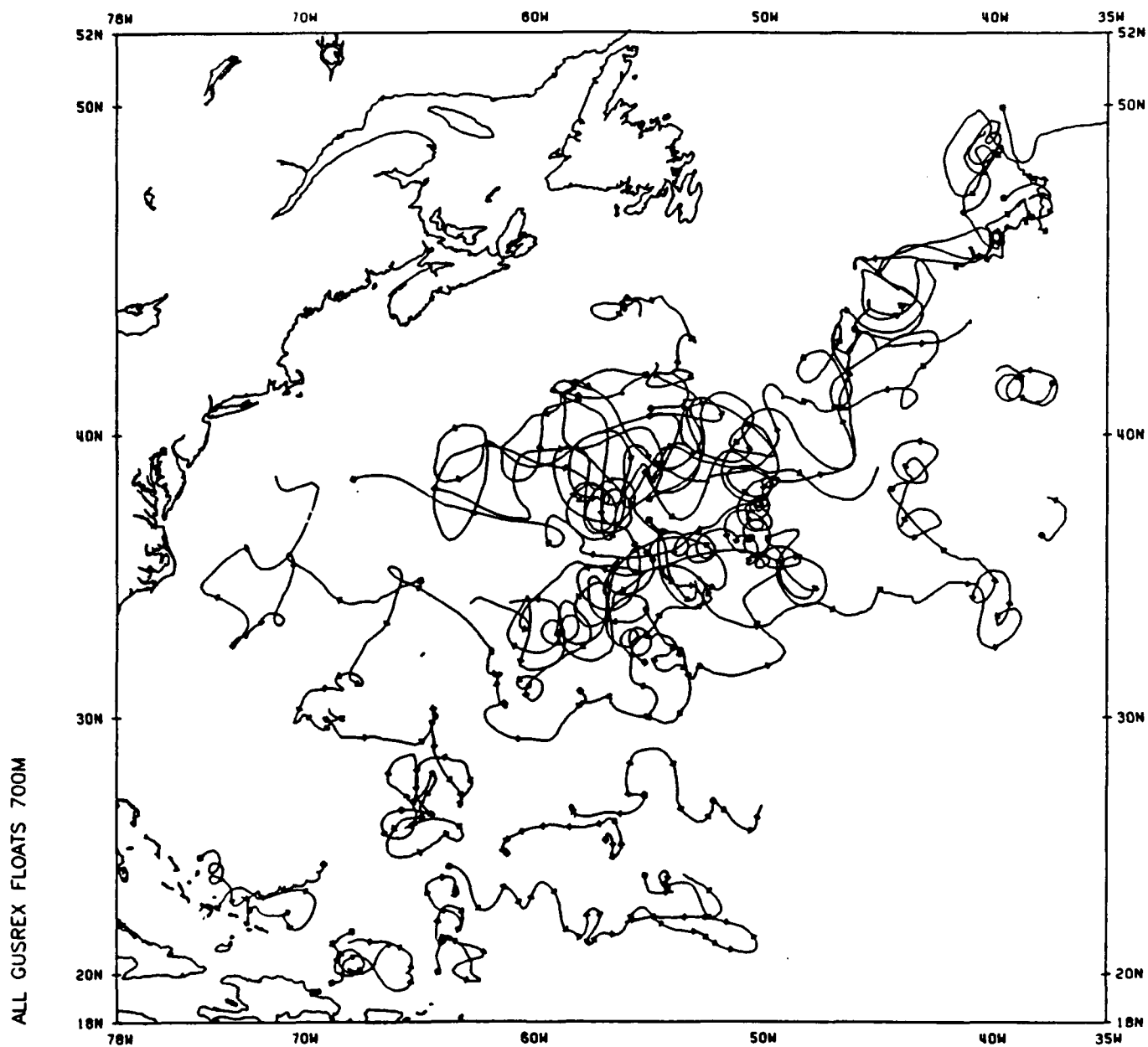


Figure 4: Composite 700-meter trajectories for floats covered in this report and earlier Gulf Stream floats. Arrowheads mark every thirtieth day.

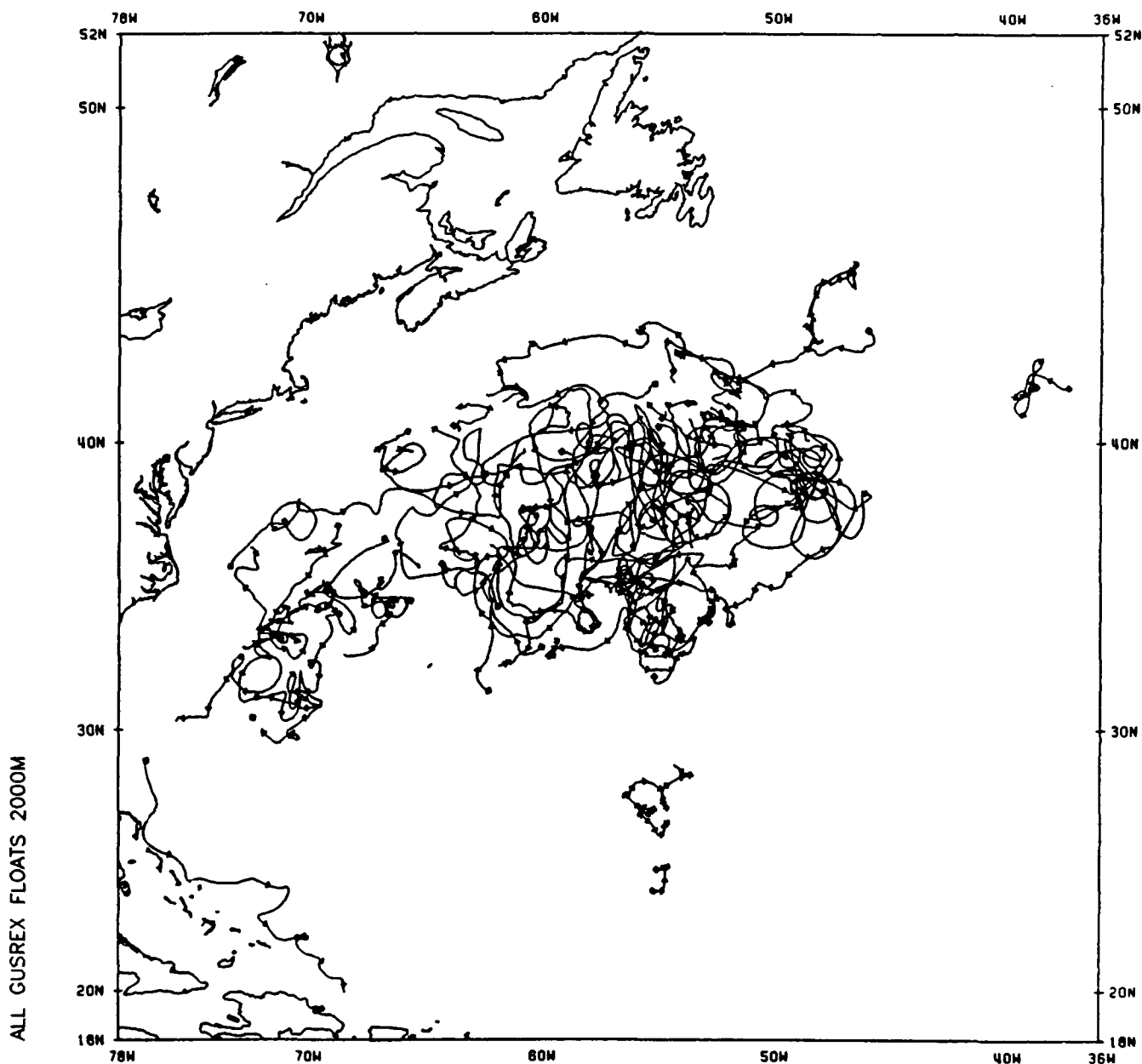


Figure 5: Composite 2000-meter trajectories for floats covered in this report and earlier Gulf Stream floats. Arrowheads mark every thirtieth day.

FLOAT	START	LAT	LONG	STOP	LAT	LONG	NO. DAYS	NOM. DEPTH	INIT. TEMP.	AVE. TEMP.	INIT. PRES.	AVE. PRES.
GS72BB	820530	25.29	-56.76	830504	24.67	-61.10	340	700	14.1	14.5	631.	618.
GU113	810809	41.94	-55.04	821030	41.26	-58.07	448	700	-	-	665.	685.
GU115A	810808	40.60	-54.86	820416	43.67	-40.94	252	700	8.7	9.9	699.	670.
GU115B	820529	46.94	-41.25	820716	49.26	-40.30	49	700	4.8	5.5	640.	684.
GU115C	821007	49.93	-39.54	830110	50.99	-31.99	96	700	4.0	4.8	663.	687.
GU116A	810808	37.10	-54.90	830502	36.89	-43.89	633	700	10.8	10.0	695.	678.
GU116B	830721	36.59	-37.81	830823	37.91	-37.57	34	700	10.0	9.6	690.	684.
GU118A	810806	32.99	-55.02	820202	30.45	-57.93	181	700	11.5	11.8	734.	711.
GU118B	820222	30.96	-57.89	830503	30.32	-68.77	436	700	12.7	12.5	707.	703.
GU118C	830607	29.92	-68.92	850901	25.76	-65.49	818	700	13.2	11.8	705.	698.
GU120A	810719	38.17	-64.21	820402	46.46	-40.15	258	700	11.4	7.8	639.	794.
GU120B	820713	47.34	-39.50	821001	47.30	-38.60	81	700	-	-	-	-
GU162A	810809	41.86	-55.08	820809	39.35	-56.15	366	2000	3.2	3.2	2126.	2163.
GU162B	821123	34.42	-61.83	830425	40.46	-64.66	154	2000	3.2	3.2	-	-
GU162C	830603	40.51	-63.72	830805	41.09	-63.64	64	2000	-	-	-	-
GU163A	810809	40.78	-54.77	830504	37.83	-49.27	634	2000	3.7	3.7	2116.	2115.
GU163B	830605	39.54	-49.46	850829	36.43	-57.99	817	2000	3.7	3.8	2100.	2093.
GU165A	810808	37.42	-55.16	810919	40.01	-55.48	43	2000	3.7	3.5	-	-
GU165B	811005	38.54	-57.51	811223	36.91	-60.69	80	2000	3.6	3.6	-	-
GU165C	820112	36.73	-60.73	830502	32.29	-61.79	476	2000	3.5	3.5	-	-
GU165D	830607	31.40	-62.22	850826	33.73	-57.52	812	2000	3.6	3.6	2199.	2161.
GU166	810807	36.02	-55.02	820717	36.53	-61.98	345	2000	-	-	-	-
GU167A	810809	32.92	-55.02	830505	33.19	-59.26	635	2000	-	-	1972.	1998.
GU167B	830607	32.99	-59.91	840419	41.28	-61.61	318	2000	-	-	1999.	2002.
GU167C	840529	40.34	-65.68	841208	39.75	-60.69	194	2000	-	-	2008.	2011.
GU169A	810721	37.21	-68.66	830505	35.92	-65.23	654	2000	3.5	3.5	2121.	2114.
GU169B	830603	36.78	-66.67	840503	36.44	-72.36	336	2000	3.6	3.6	2079.	2038.
GU169C	840522	35.82	-73.19	850101	39.73	-57.51	225	2000	-	-	-	-
GU169D	850201	41.19	-55.31	850211	41.00	-54.60	11	2000	-	-	-	-
GU169E	850225	41.25	-53.63	850823	39.45	-52.57	180	2000	-	-	-	-
GU170A	810719	34.63	-65.55	820429	32.73	-68.37	285	2000	3.7	3.7	2144.	2136.
GU170B	820604	34.17	-68.59	830503	30.05	-71.86	334	2000	3.6	3.6	2148.	2119.
GU170C	830626	31.17	-72.07	840502	30.33	-75.54	312	2000	3.7	3.7	2065.	2025.
GU170D	840524	28.85	-76.82	841224	19.91	-68.31	215	2000	-	-	-	-
PL12D	810116	19.61	-68.68	810713	21.25	-67.94	179	700	5.4	5.9	-	-
PL12E	810719	21.68	-67.80	820116	21.15	-66.16	182	700	6.2	6.1	-	-
PL12F	820311	20.05	-64.05	830423	23.49	-63.28	409	700	6.2	6.1	-	-
PL12G	830608	24.26	-63.58	850613	22.05	-55.93	737	700	6.2	5.9	-	-

Table 1: Table of float information.

segment. The initial and average values for temperature and pressure are shown (dash indicates absence of data).

Another float still operating in May 1982 was PL12 which was launched on October 4, 1976, at 24.4°N, 69.0°W, as part of a pilot study for POLYMODE called Pre-LDE (Spain *et al.*, 1980; McKee, 1986). This float was launched by Riser and Rossby (1983) in an isolated eddy of warm, saline Mediterranean water in the Nares Abyssal Plain. It was ballasted to approximately 900 m depth in order to track the "meddy". PL12 is the longest operating SOFAR float (Owens *et al.*, 1988). In figures where the floats are divided by depth, PL12 is included with the 700-meter floats.

The other non-GUSREX float covered in this report is GS72B, launched on June 6, 1979, at 38.4°N, 67.9°W, near but south of the axis of the Gulf Stream (Kennelly and McKee, 1984). This float had a nominal depth of 700 m.

Figure 6 is a histogram of total durations. Excluding PL12 because it had such a different history, the average duration for all the Gulf Stream floats is 1.45 years (1.65 if floats with reused batteries aren't included). The average duration of the 13 floats reported here (without PL12) is 2.8 years, which could be lower than the actual value, since five floats (see plus signs on Figure 6) appeared to still be in operation when the last ALS array was retrieved. Of these, four were deep and one shallow, which agrees with earlier observations that the 700-meter floats were more prone to sudden failure (Kennelly and McKee, 1984). In addition, five other floats were fading at the end of their data records. For at least four of these, moving out of range appears to be a sufficient cause of the decreased signal power. GU120, on the other hand, looks like its lithium batteries, reused from an earlier experiment, were giving out. Alkaline-powered floats tend to die abruptly, as GU113 and GU116 did (Kennelly and McKee, 1984).

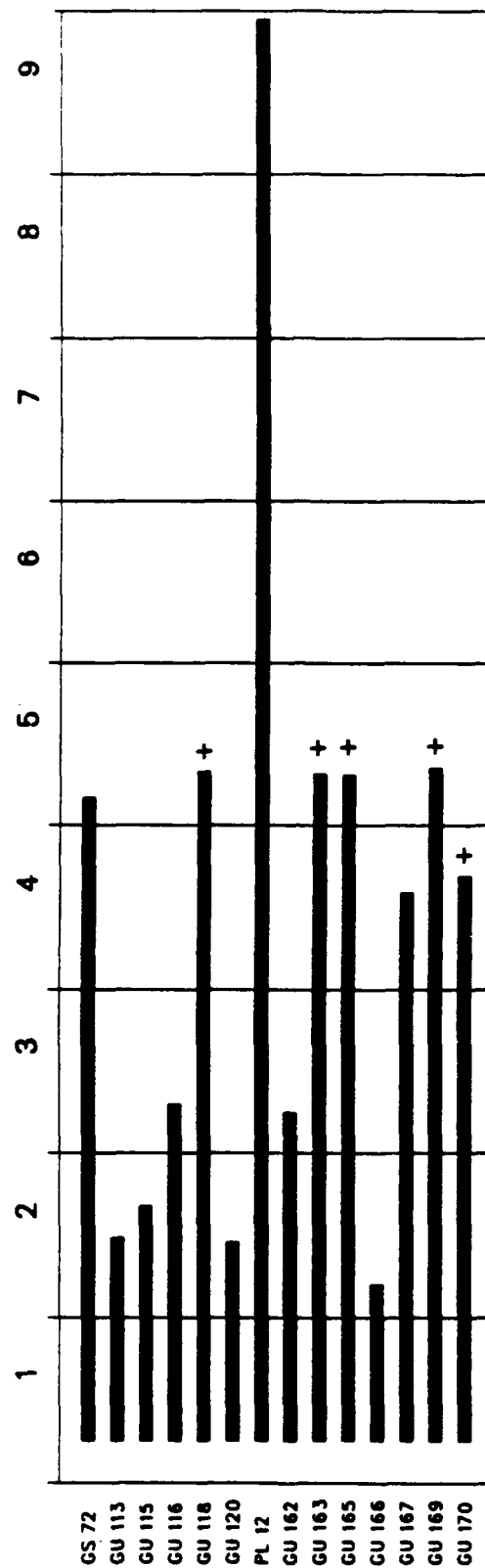


Figure 6: Total duration of floats covered in this report.

2 Instrumentation

SOFAR floats are freely drifting, neutrally-buoyant subsurface instruments. Every eight hours each instrument transmits a low-frequency acoustic signal which, under optimal conditions, can be heard by an ALS at distances on the order of 2500 km. Forty-eight-hour averages of pressure and temperature are transmitted on alternate days. The ALSs are vertical arrays of hydrophones deployed on a subsurface mooring. A microprocessor-controlled detection system records the times of arrival of the four strongest float signals during each ten-minute interval. During the GUSREX experiment, the ALSs were renewed annually.

3 Processing

In general, the floats discussed in this report were tracked using the methods which are standard at W.H.O.I. (Owens and McKee, 1989). Because of the long duration of some of these floats, special care had to be taken in calculating clock drifts. The data after May 1982 were the first floats tracked at W.H.O.I. The earlier data had initially been tracked at the University of Rhode Island (see Spain *et al.*, 1980, for technique), but were later retracked at W.H.O.I. for consistency.

Analysis on Site L floats (Price *et al.*, 1987, p.13) suggests that the precision of float positions is approximately 2 km.

Temperatures or pressures that drifted outside the range of the sensors have been deleted, as have values that were not associated with a position.

Trajectories having gaps greater than ten days were broken into subfiles and labelled A, B, C, etc. This was necessary for all floats being tracked in May 1983, since the first setting ALSs ran out of tape before the next ALSs could be deployed. Gaps of less than ten days in position, temperature, or pressure were

linearly interpolated to the eight-hour interval. See Figures 7 and 8 for times covered by each float. See Figures 9 and 10 for distance traveled by each float, by segment.

These interpolated series were then filtered using a seven point, one-day-half-width Gaussian filter. Finally, a cubic spline was fitted to the filtered positions to produce one location per day, and east and north components of velocity were calculated.

4 General Information for Individual Float Plots

A trajectory plot and a group of time series plots are presented for each float in Appendix A. The order of the time series plots is: "stick diagram" (u - v vectors), u and v velocity component overplot, and temperature and pressure overplot (where data are available). These plots were created with the objective of presenting the data for a particular float; thus the scales vary between floats. The time axis is consistent throughout, with 200 days per page. The time axis is annotated with the last four digits of the Julian day and with the calendar date. Data points are plotted at daily intervals.

The stick plots show a velocity vector for each day, with the stick length proportional to the speed in centimeters per second. North is toward the top of the page. The separate components on the u and v time series are plotted at the same scale.

Temperature and pressure are overplotted, temperature on a centigrade scale marked on the lefthand axis, pressure in decibars on the righthand axis. Pressure is plotted with deeper values at the bottom of the scale.

A trajectory for each float is plotted on a Mercator projection. Open circles denote the first float position, small dots mark the daily positions, large dots every

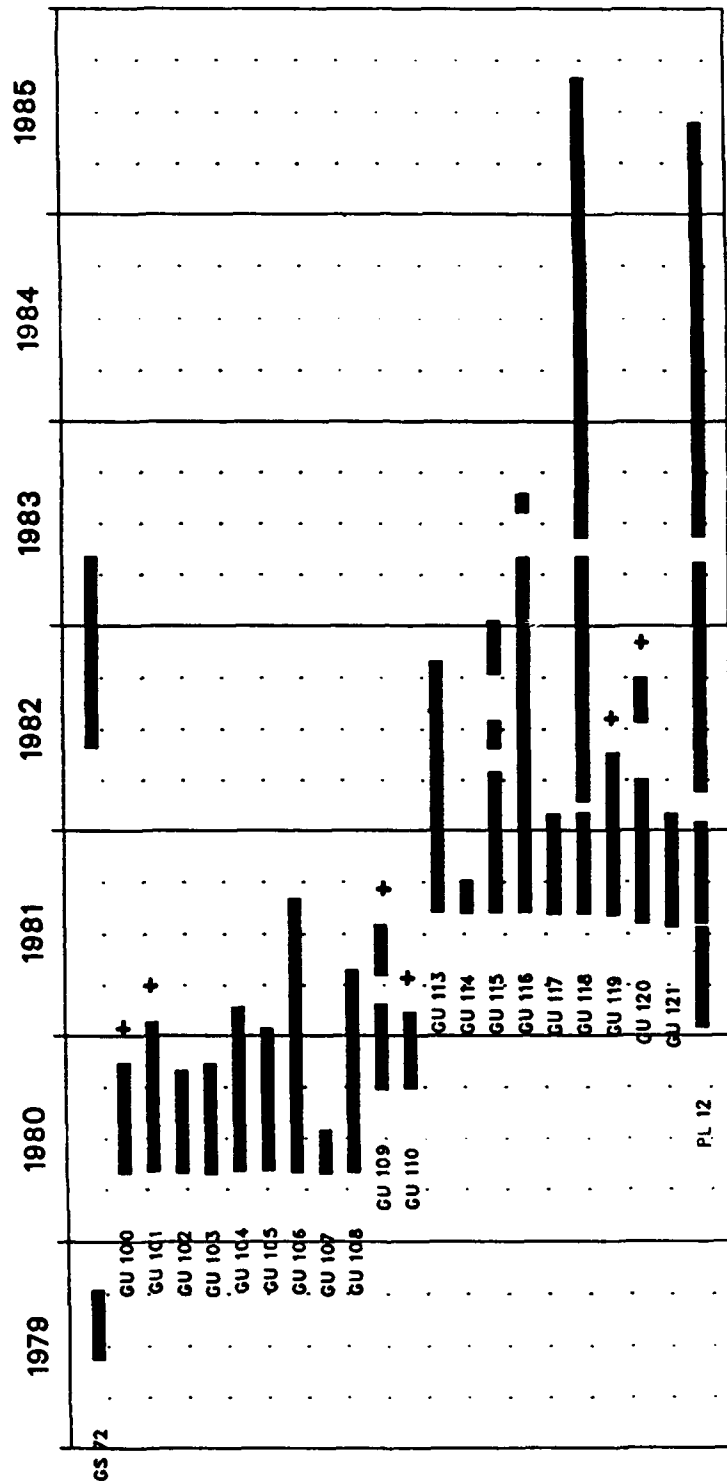


Figure 7: Float duration for all 700-meter GUSREX floats as a time line. + means reused from previous experiment.

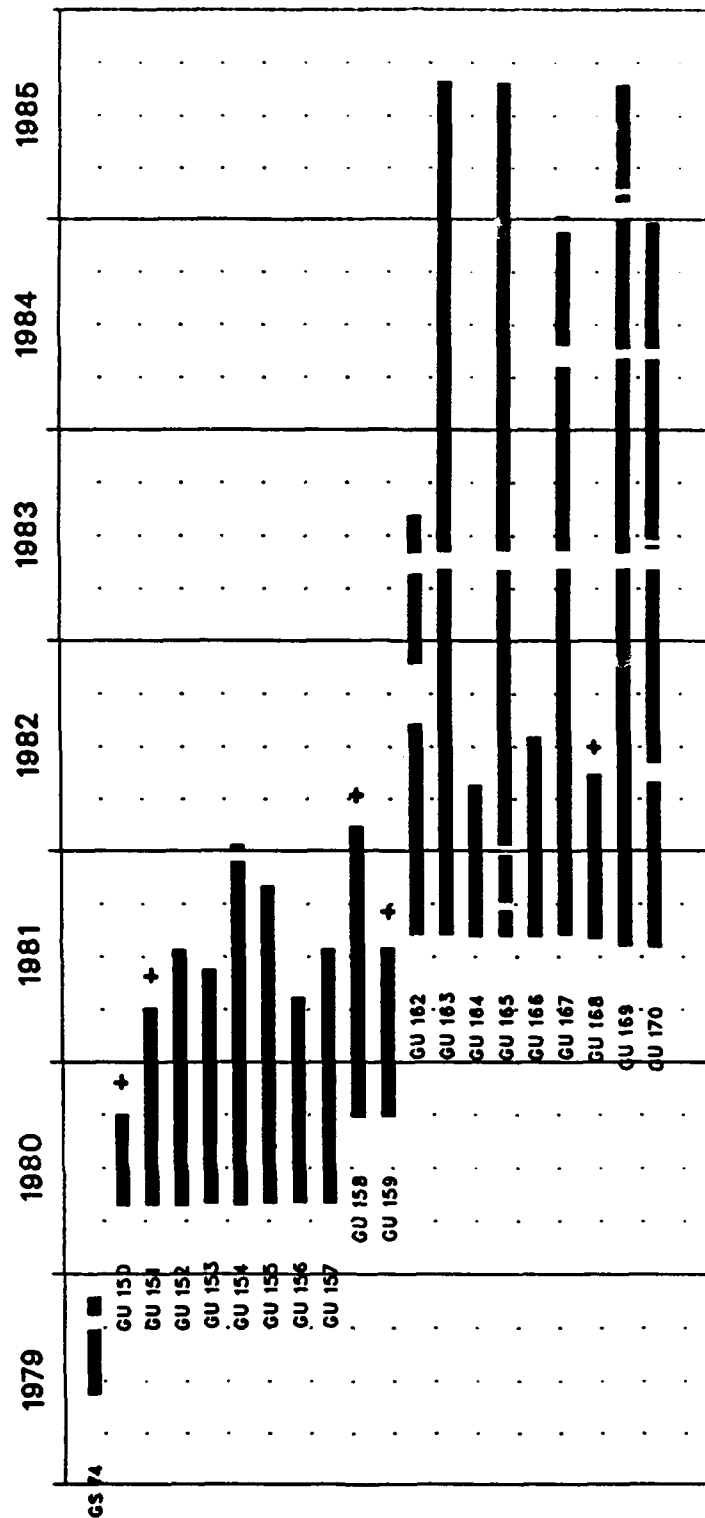


Figure 8: Float duration for all 2000-meter GUSREX floats as a time line. + means reused from previous experiment.

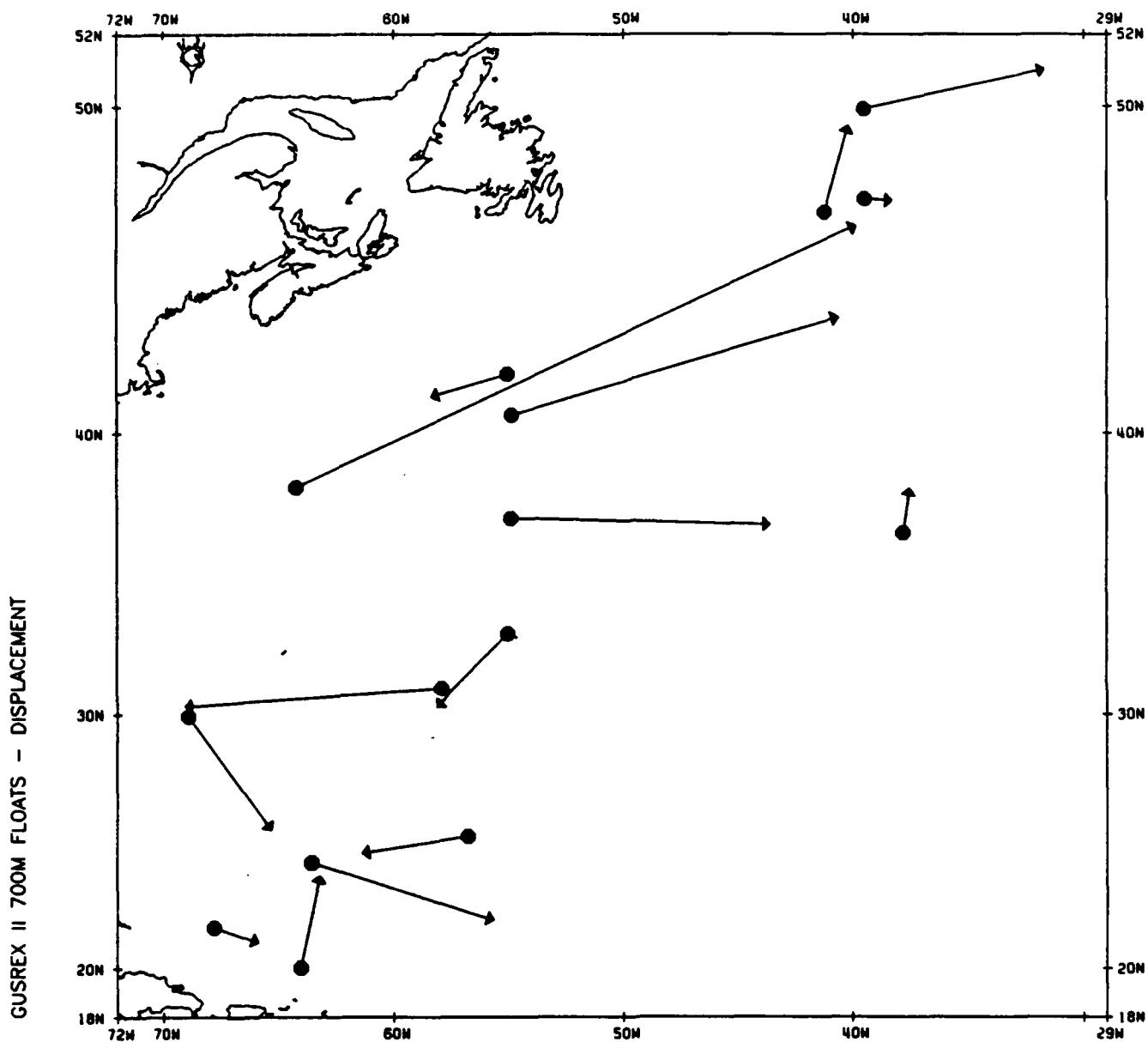


Figure 9: Total displacement of 700-meter floats covered in this report, by segment. Arrows mark final locations.

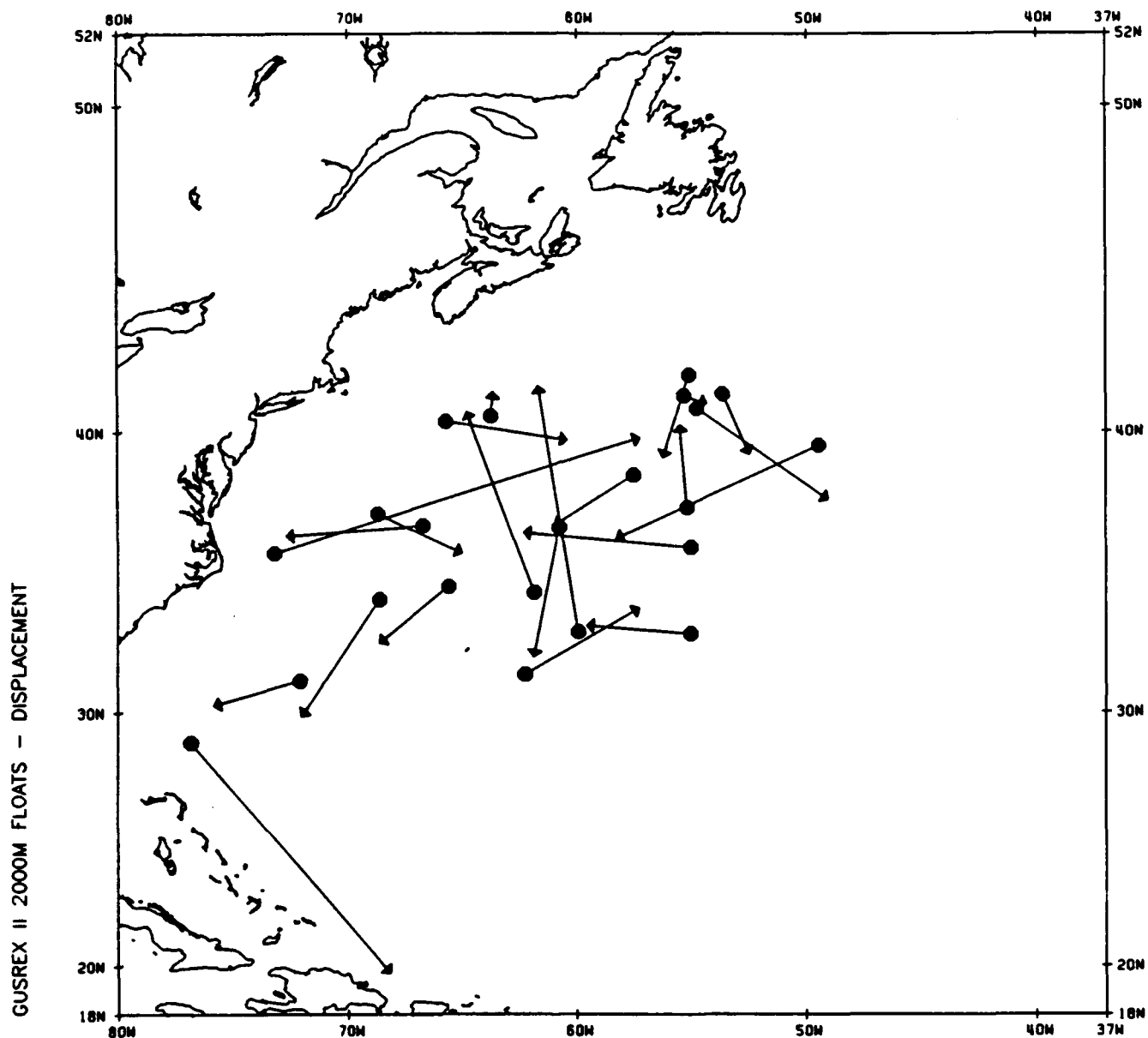


Figure 10: Total displacement of 2000-meter floats covered in this report, by segment. Arrows mark final locations.

tenth day, and every twentieth day is annotated with the last four digits of the Julian day. Refer to Appendix C to convert Julian day to calendar date.

Acknowledgements

This research was made possible with funds provided by the National Science Foundation (OCE81-09145 and OCE81-17467). Principal investigators were W. B. Owens, J. F. Price, and P. L. Richardson. Technical support was provided by the float operations group. R. A. Goldsmith developed many of the programs for analyzing float data. B. Gaffron and T. K. McKee made helpful editorial remarks and M. A. Lucas typed the manuscript.

References

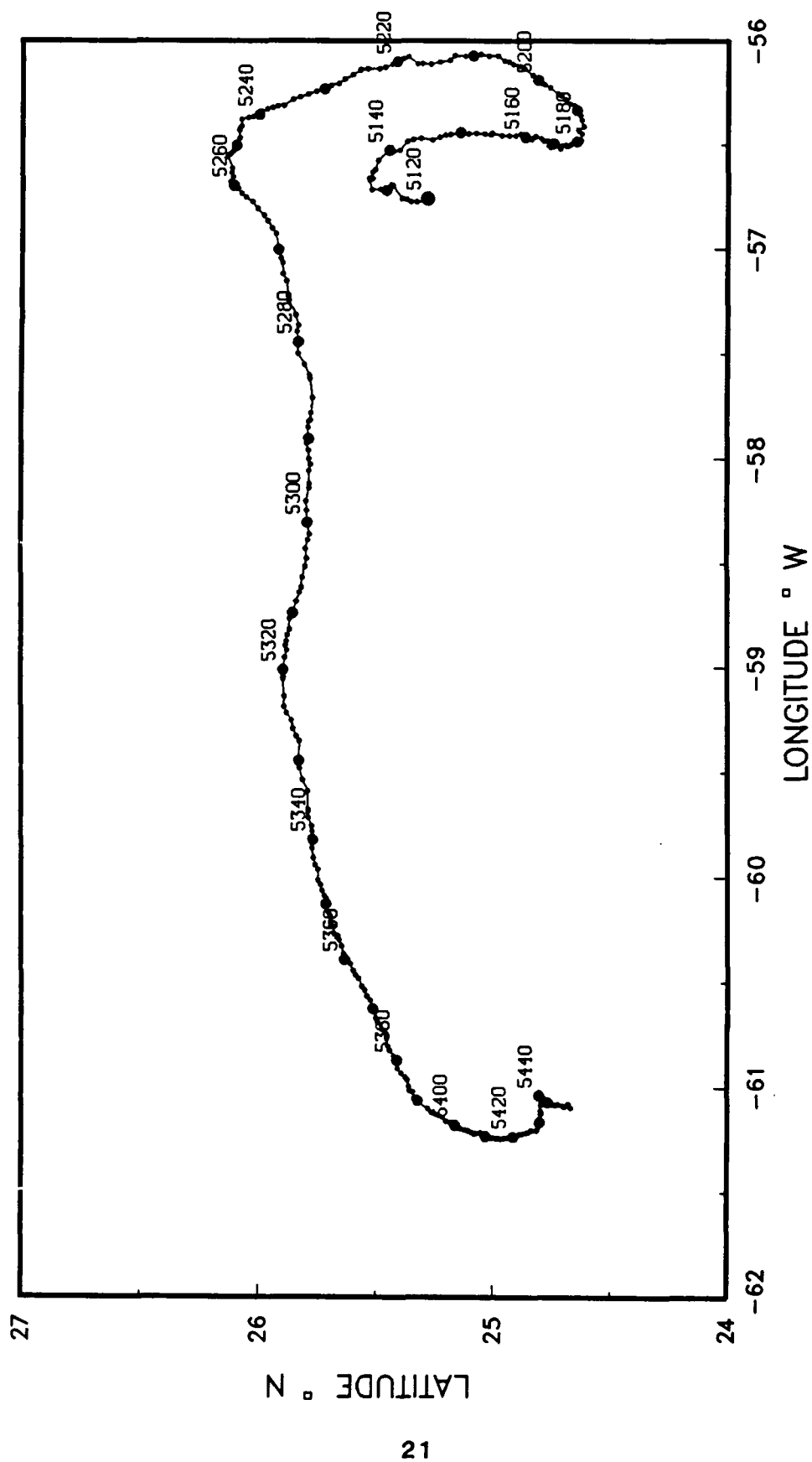
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Spain, D. L., R. M. O'Gara, and H. T. Rossby, 1980. SOFAR float data report of the POLYMODE Local Dynamics Experiment. University of Rhode Island Technical Report No. 80-1, 200 pp.

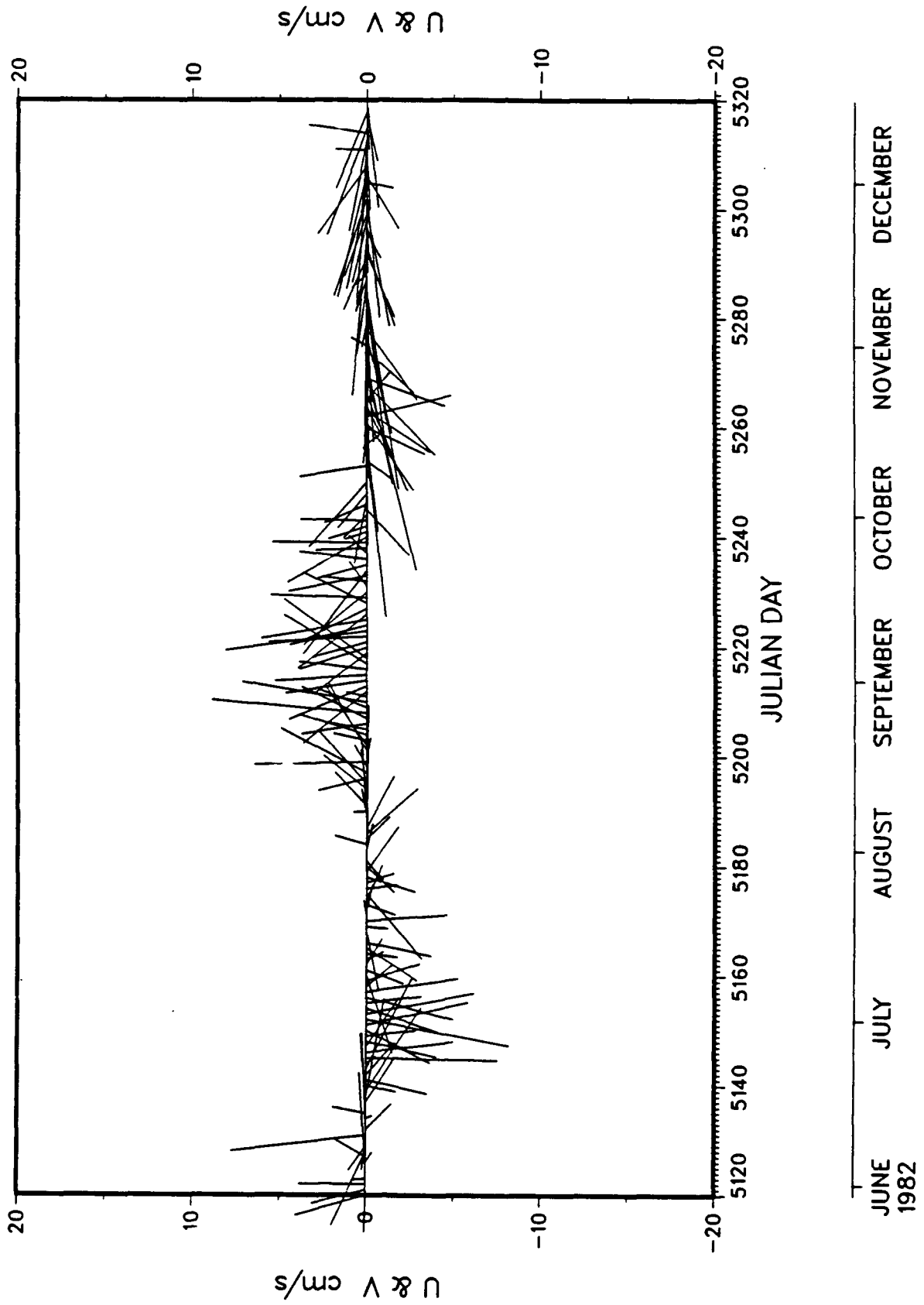
Worthington, L. V., 1976. On the North Atlantic circulation. *The Johns Hopkins Oceanographic Studies*, 6, 110 pp.

APPENDIX A: Individual Float Plots

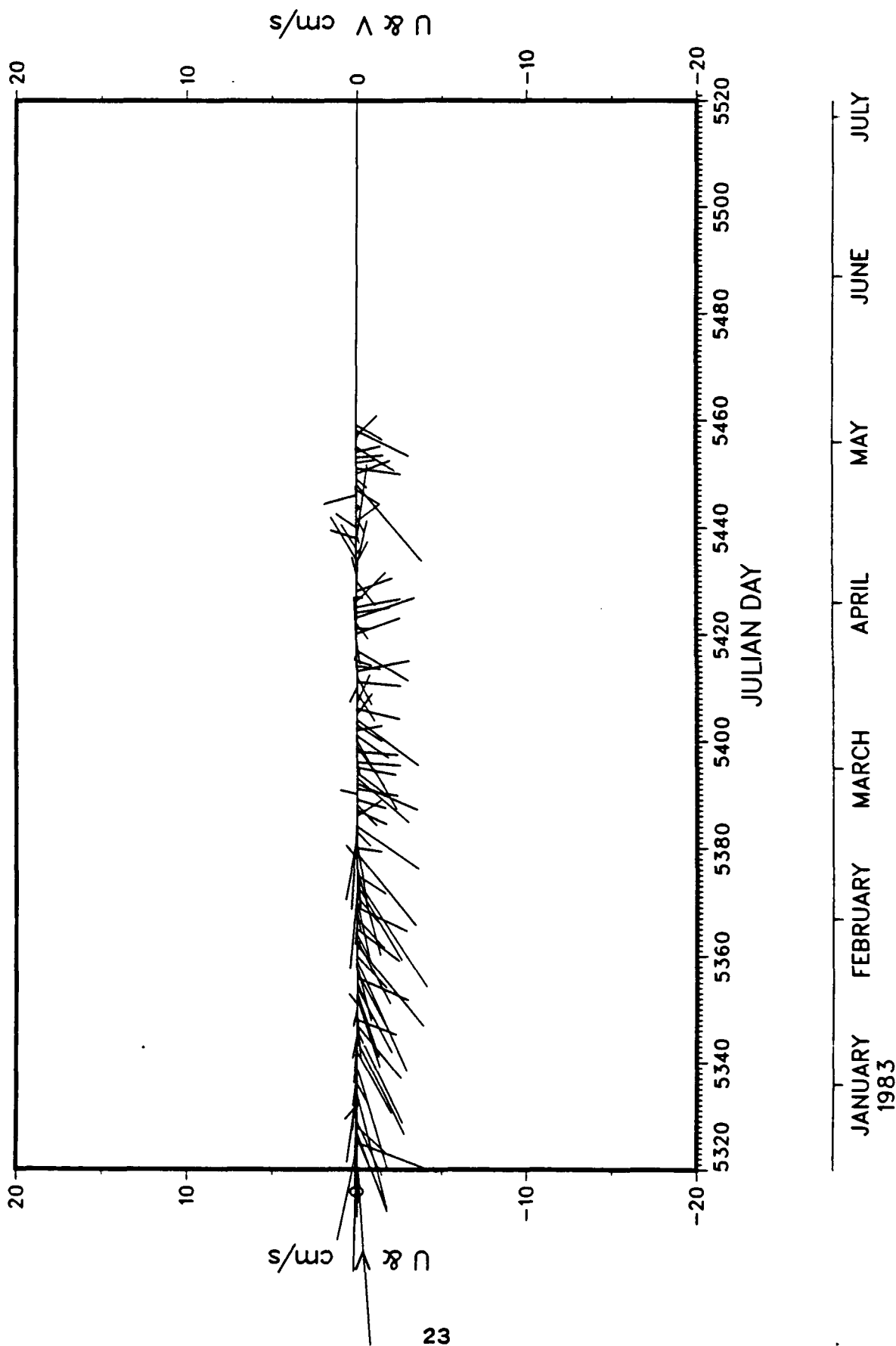
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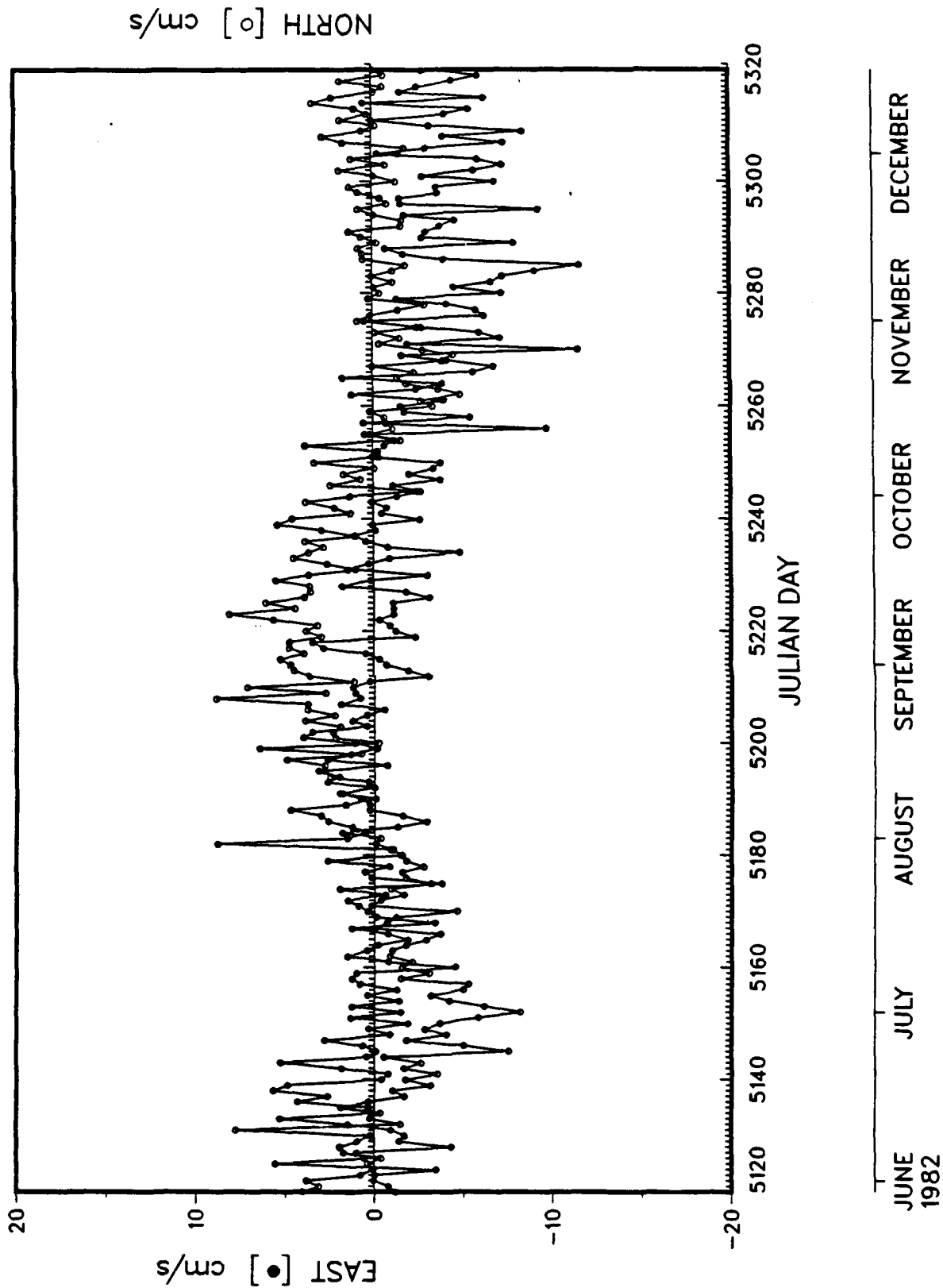
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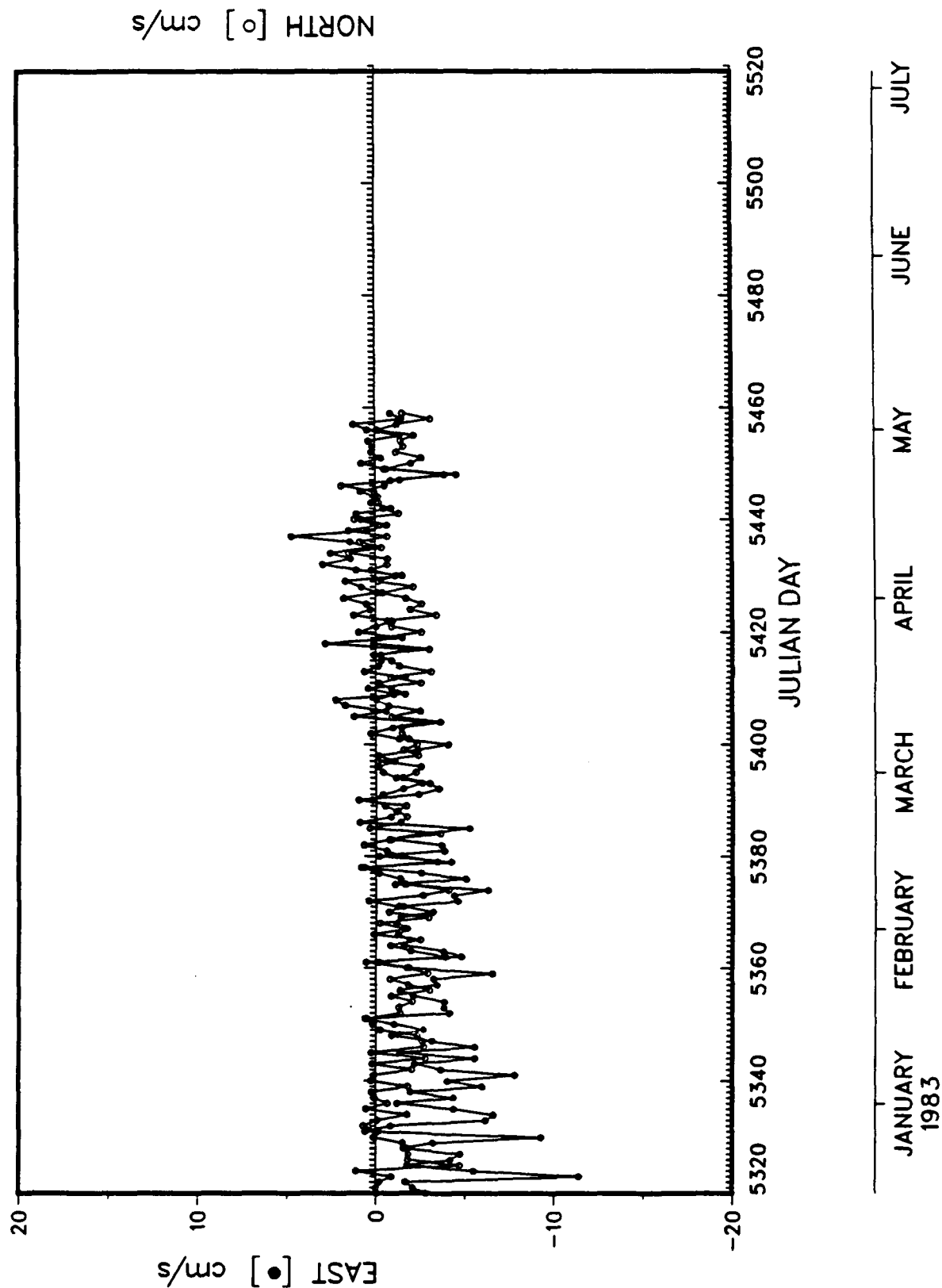
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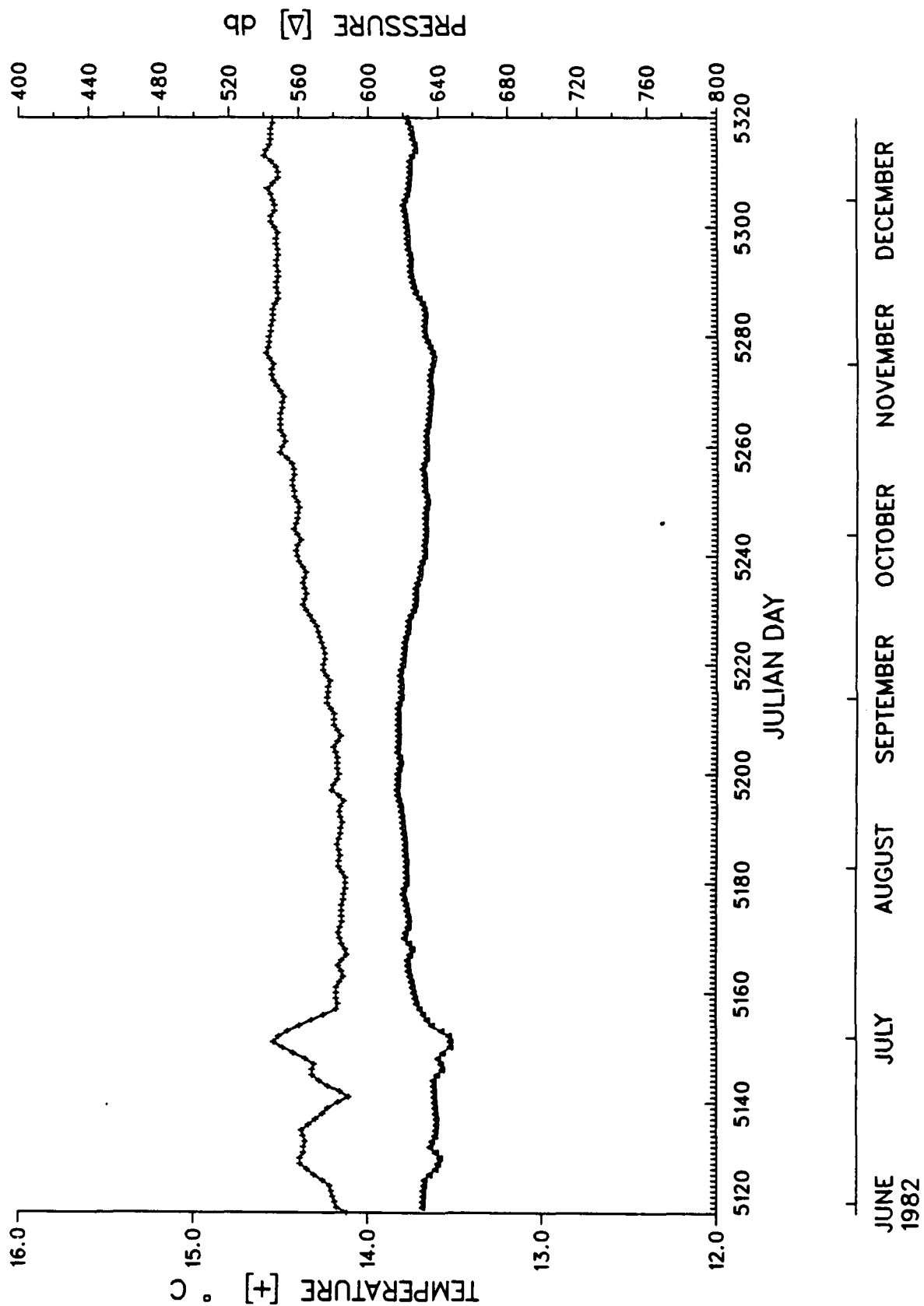
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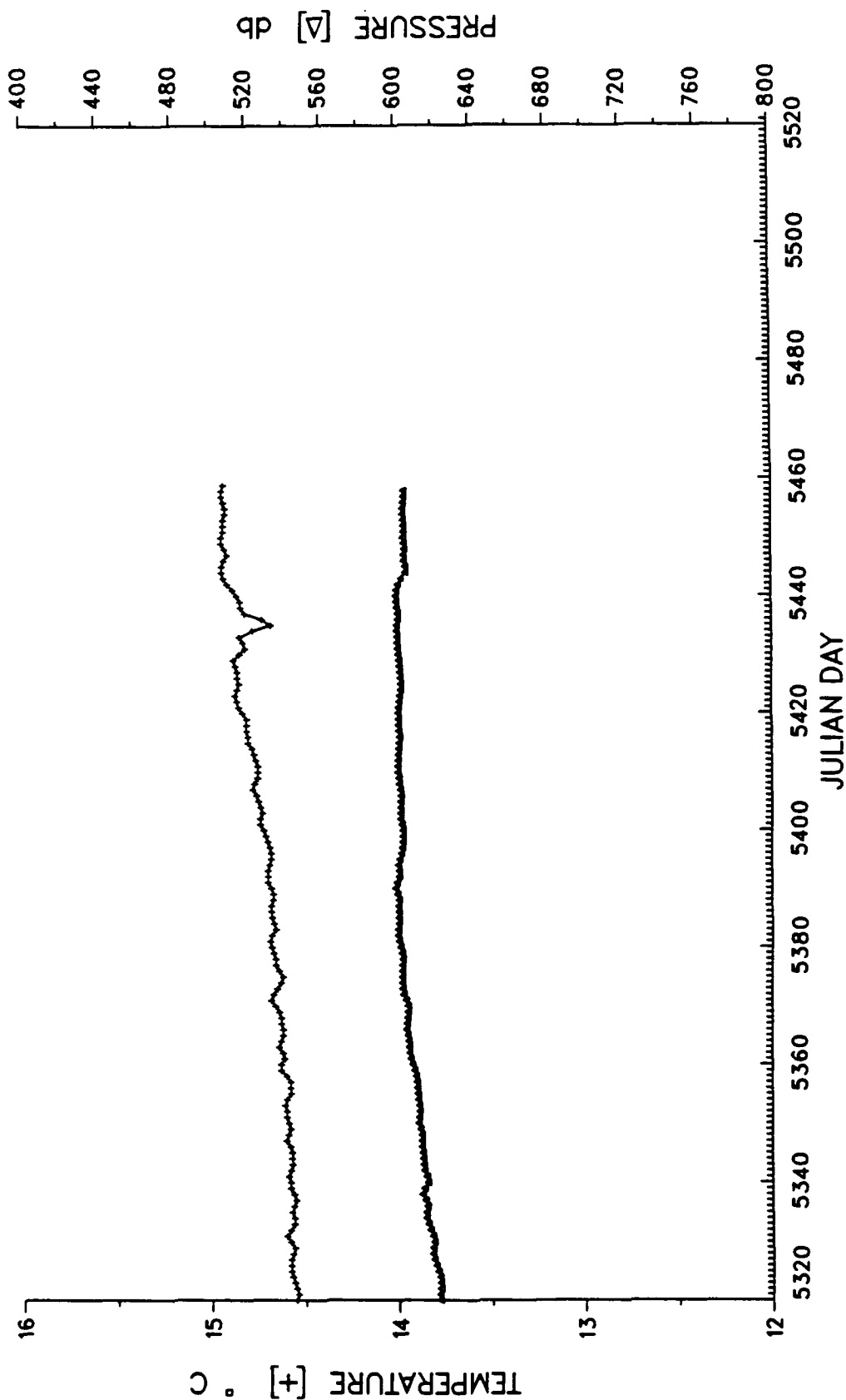
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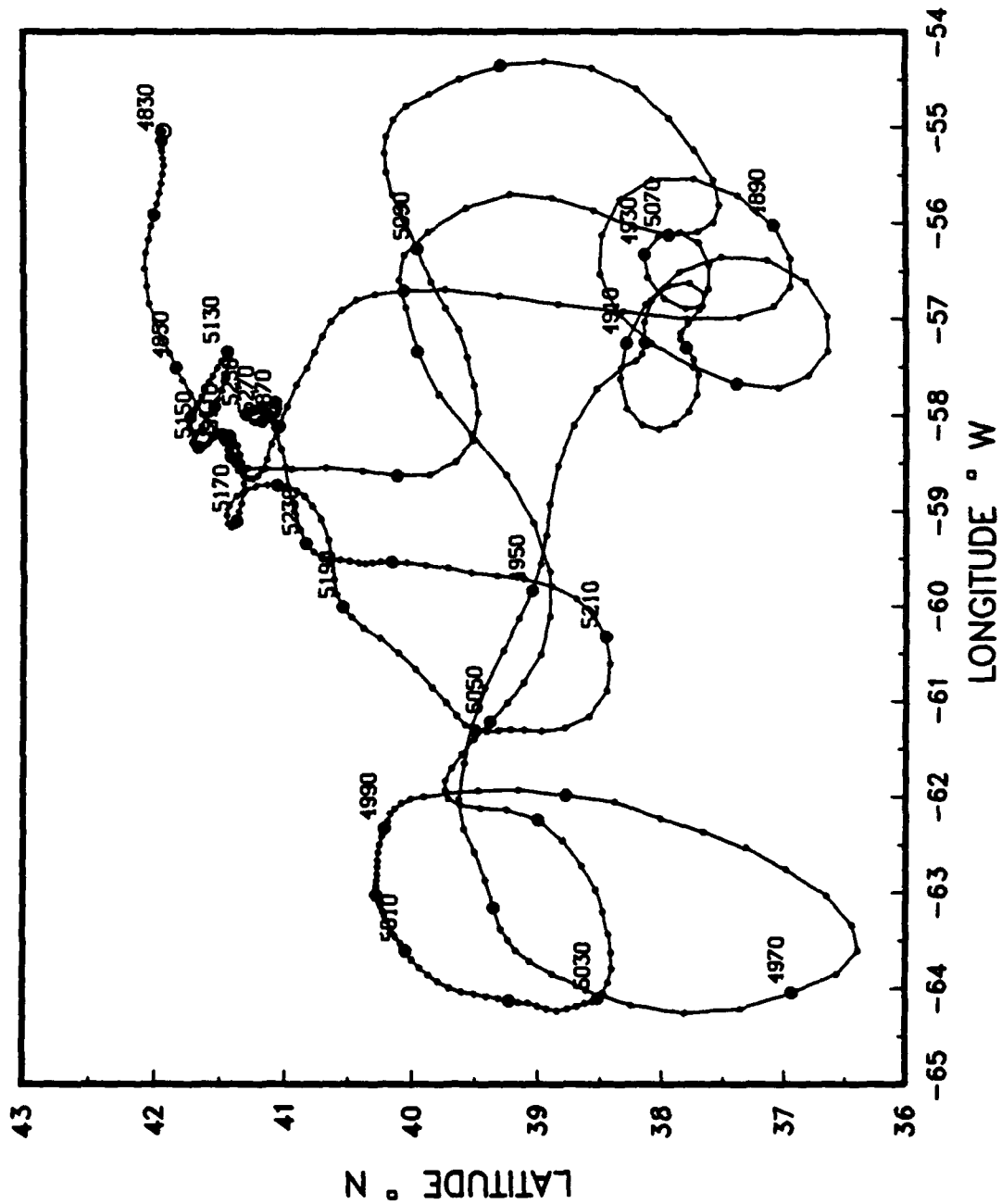


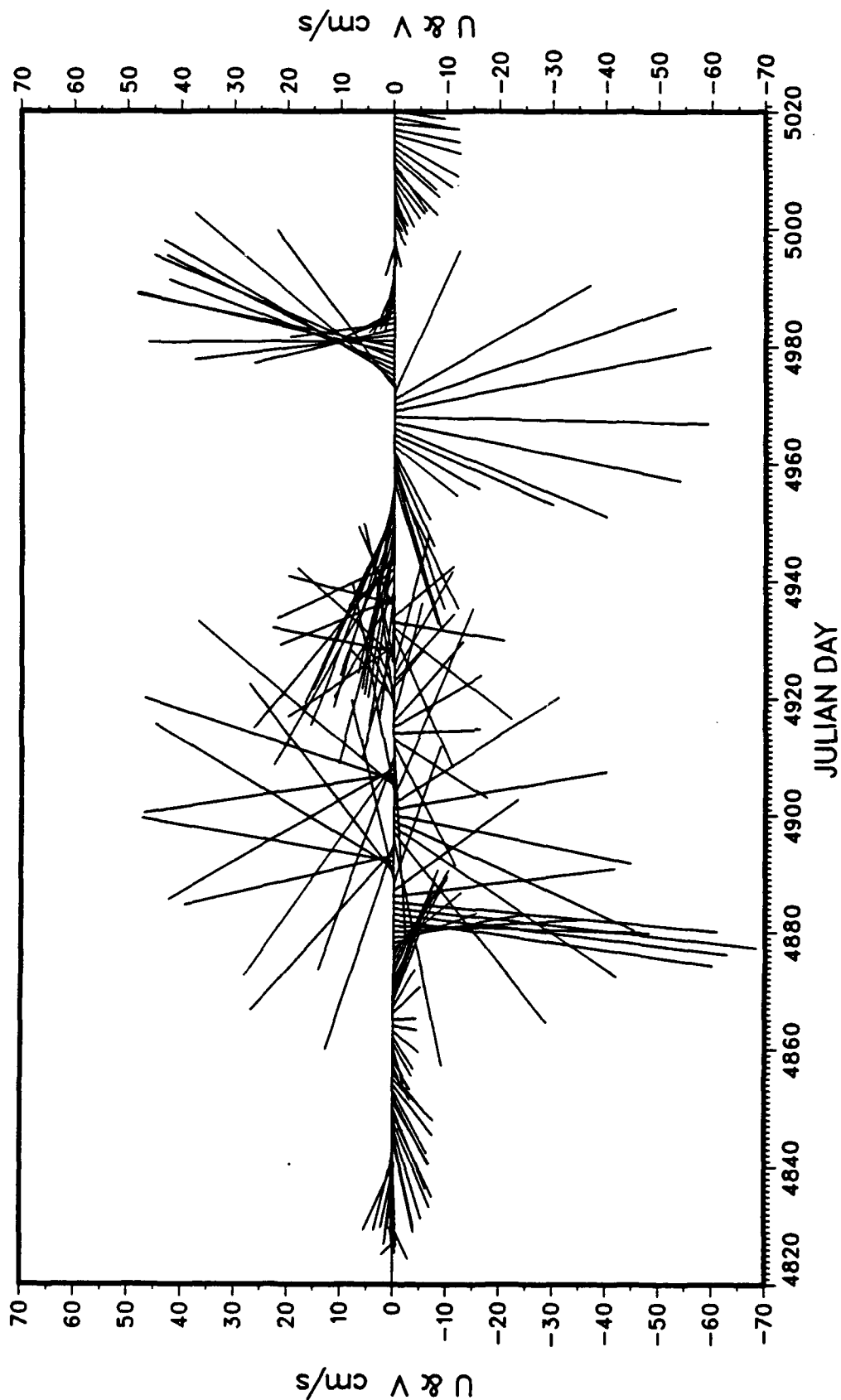
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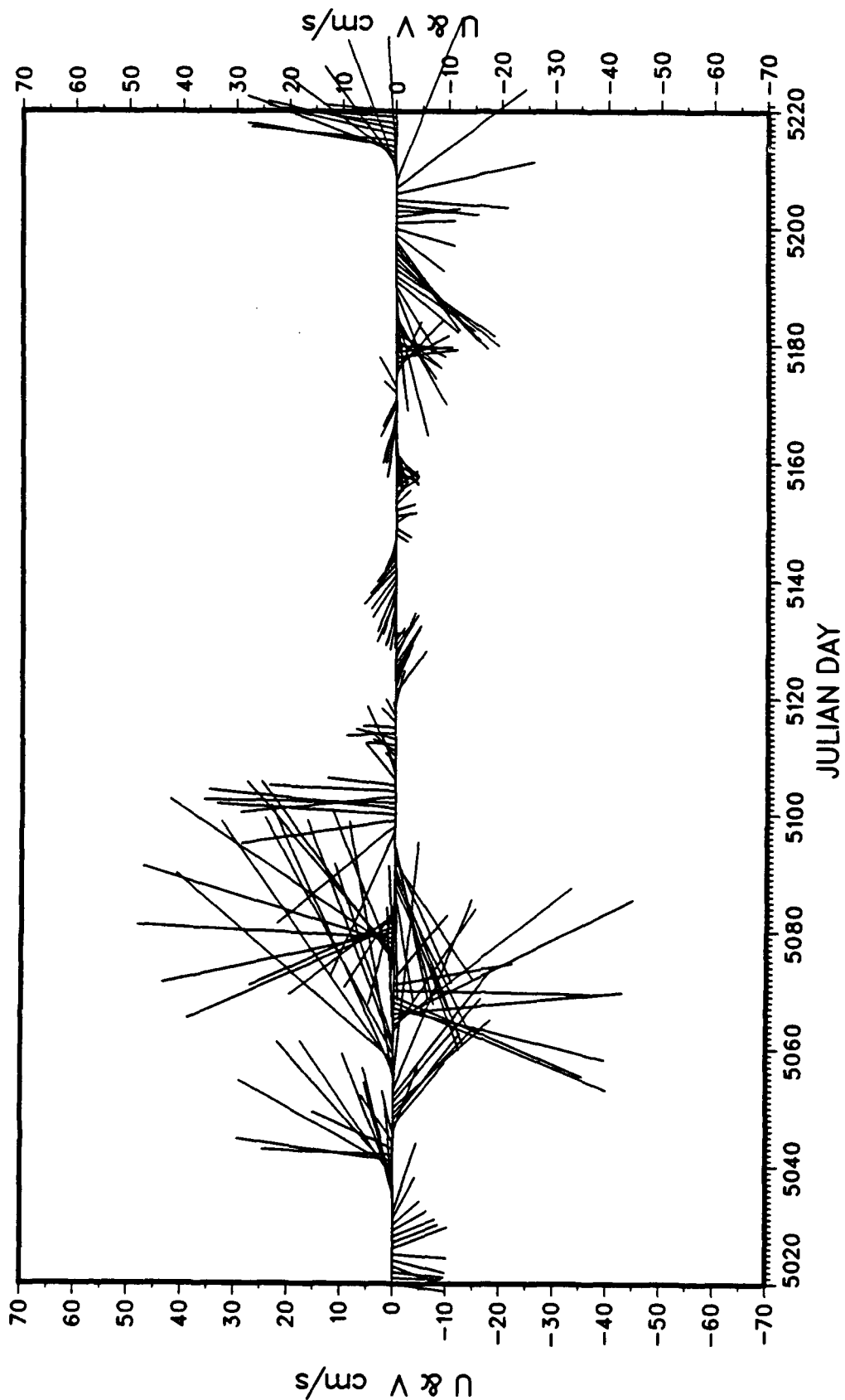
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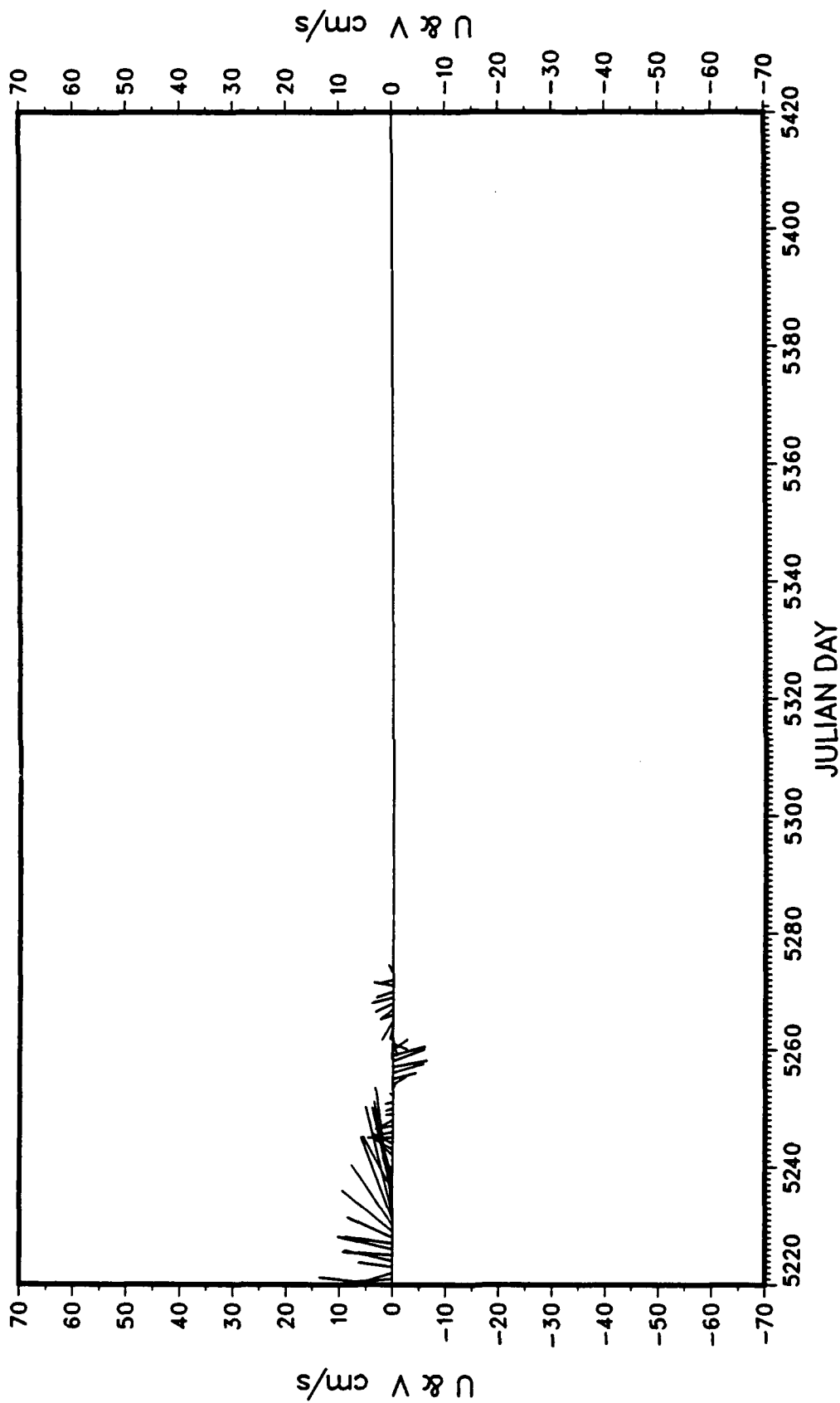


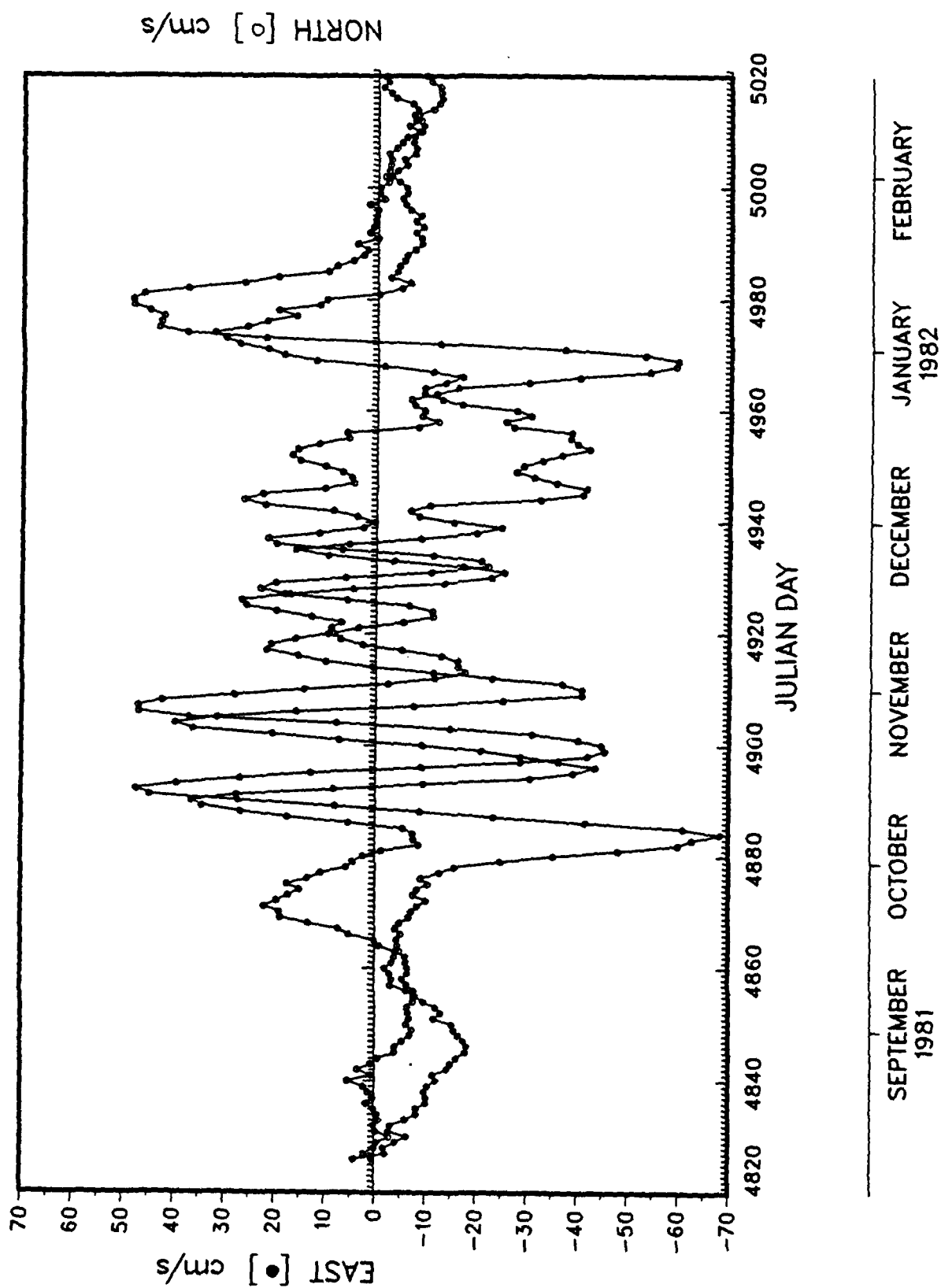


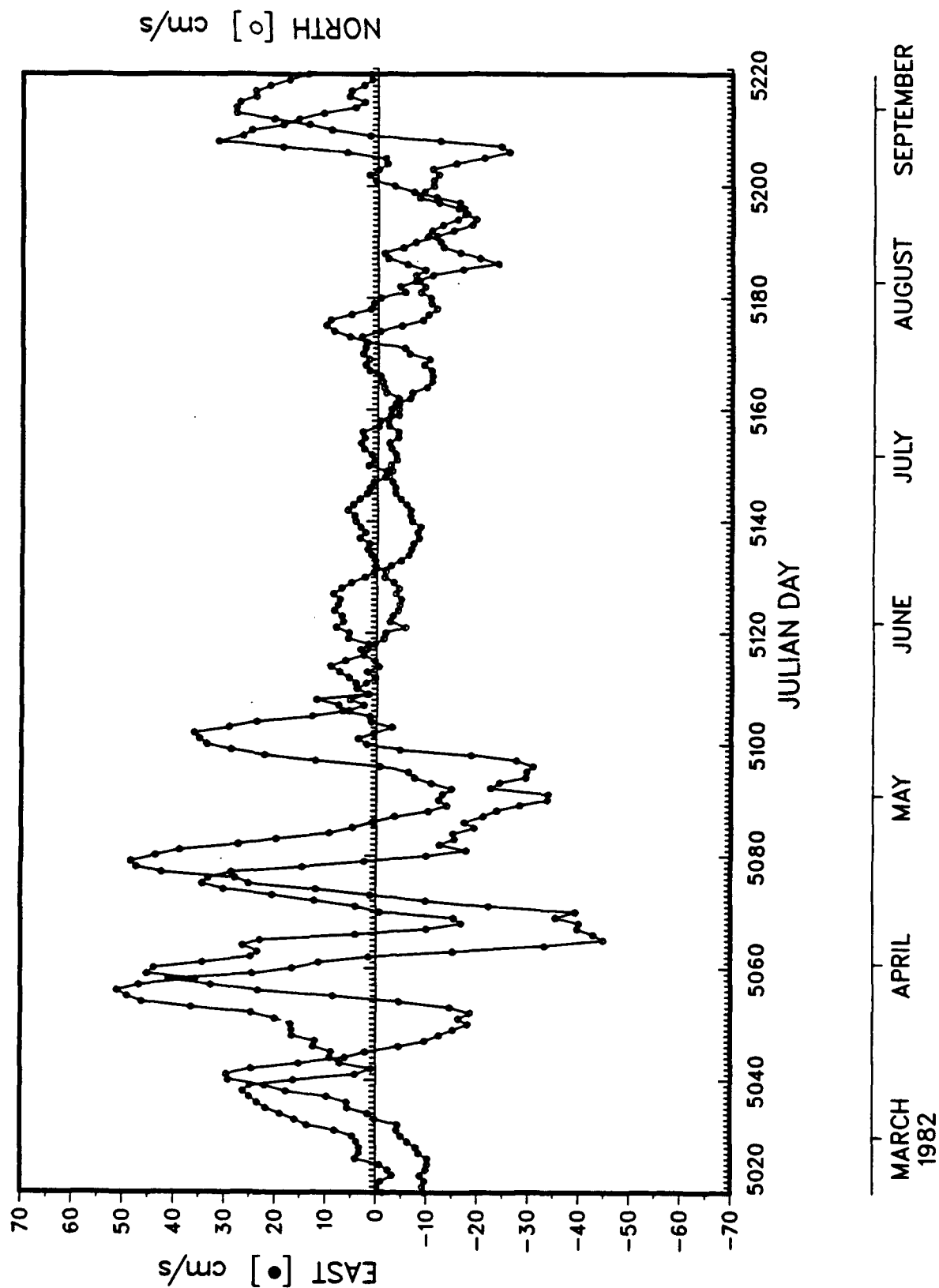
SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

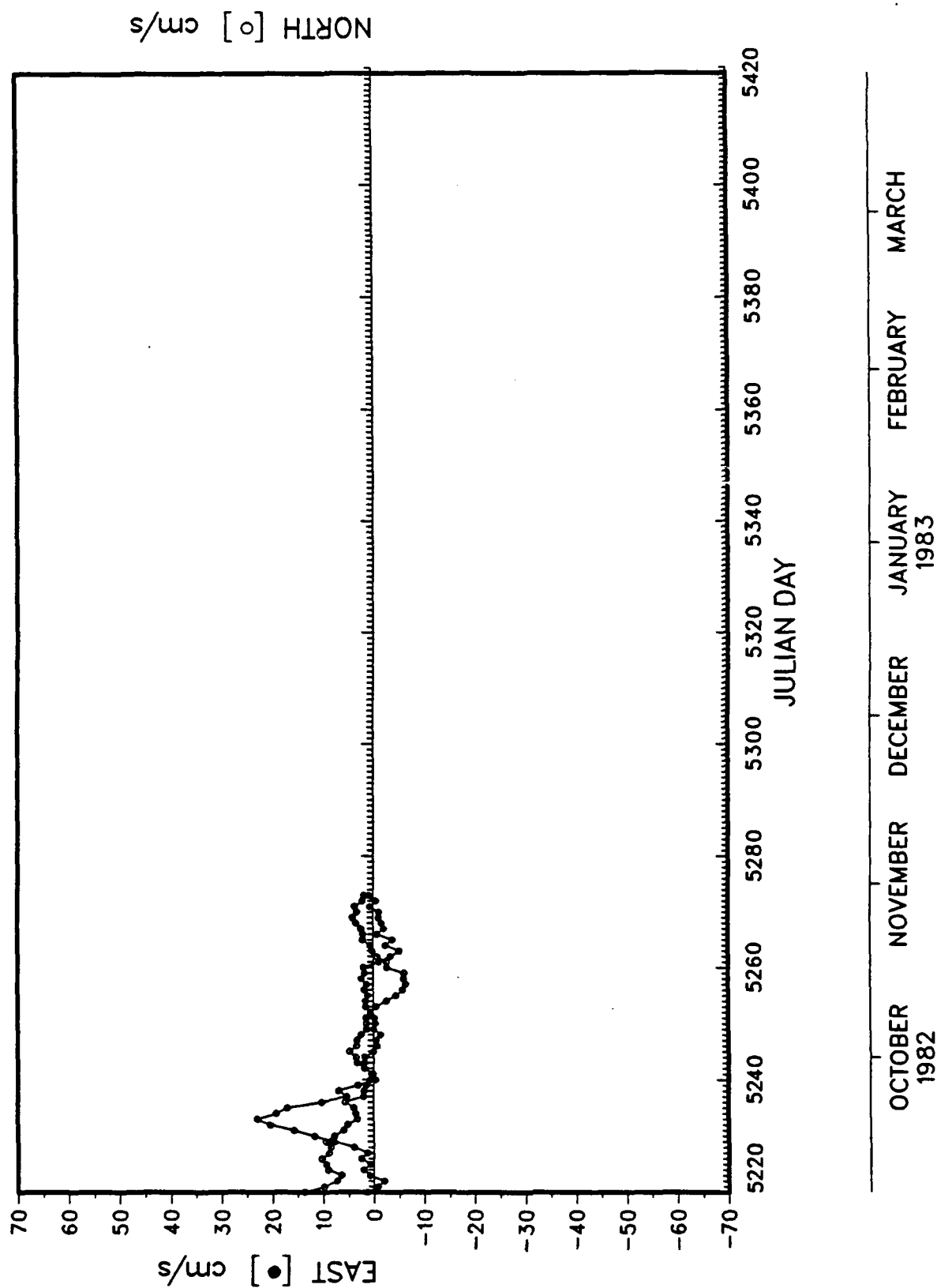


MARCH 1982 APRIL MAY JUNE JULY AUGUST SEPTEMBER

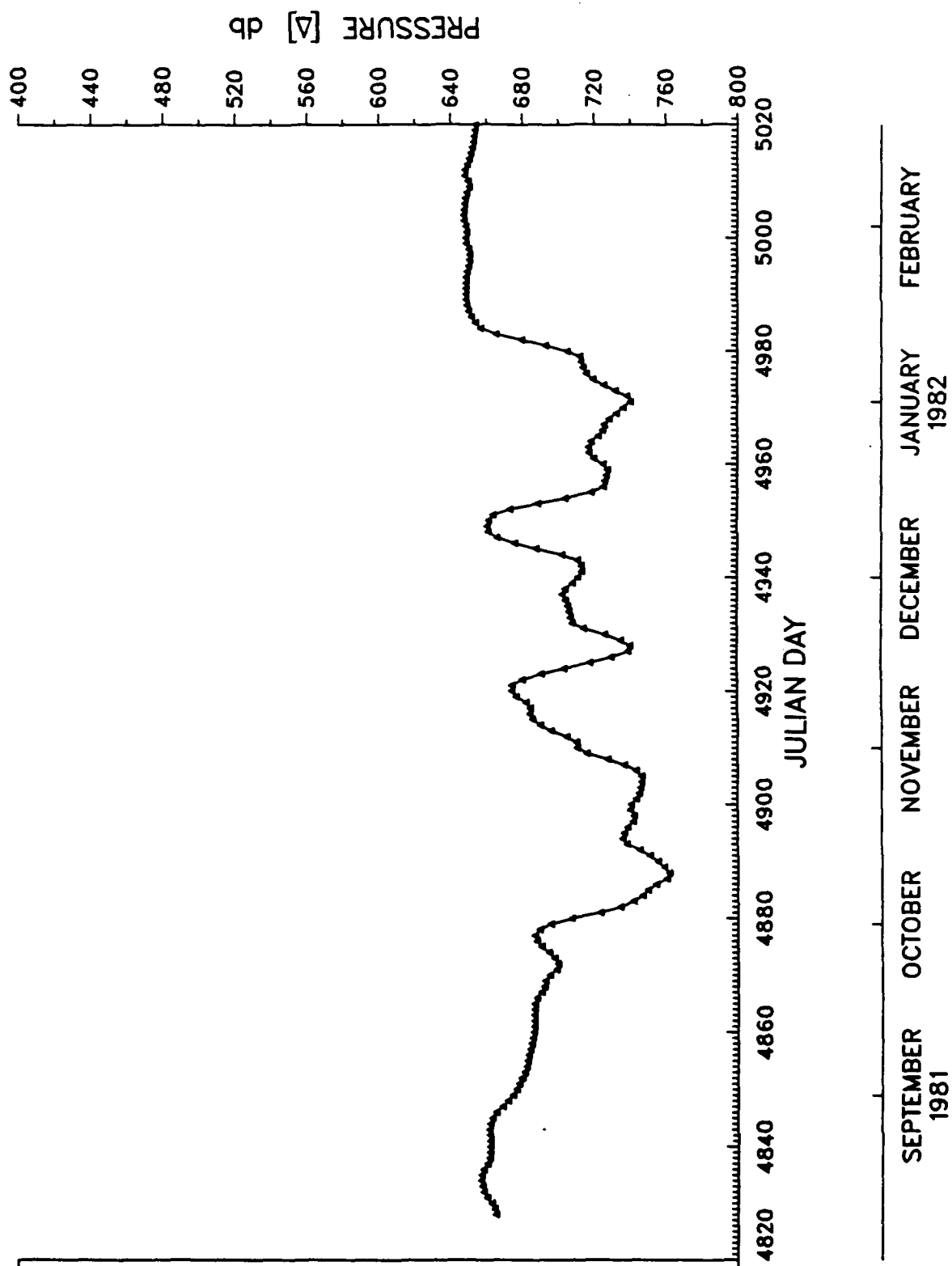


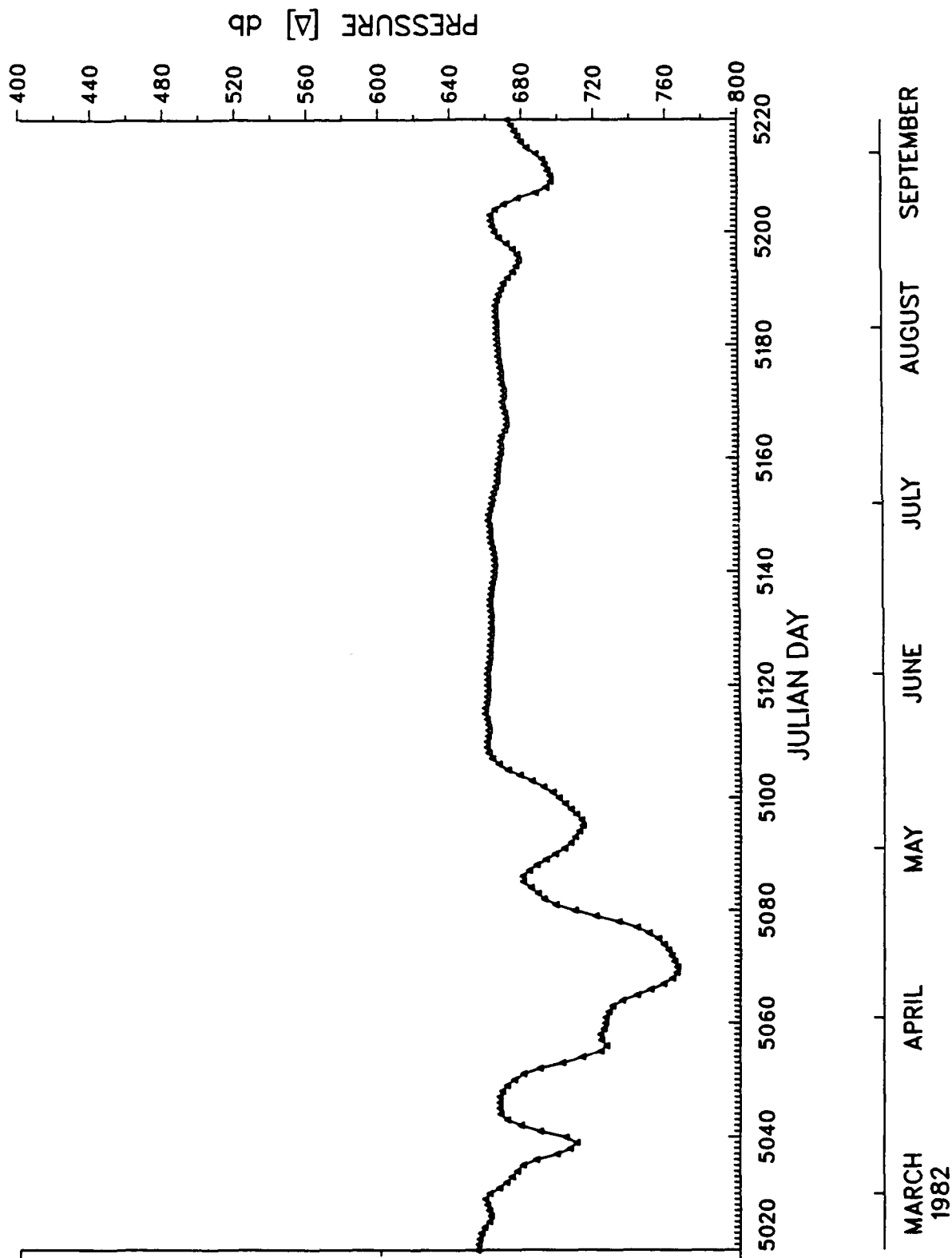




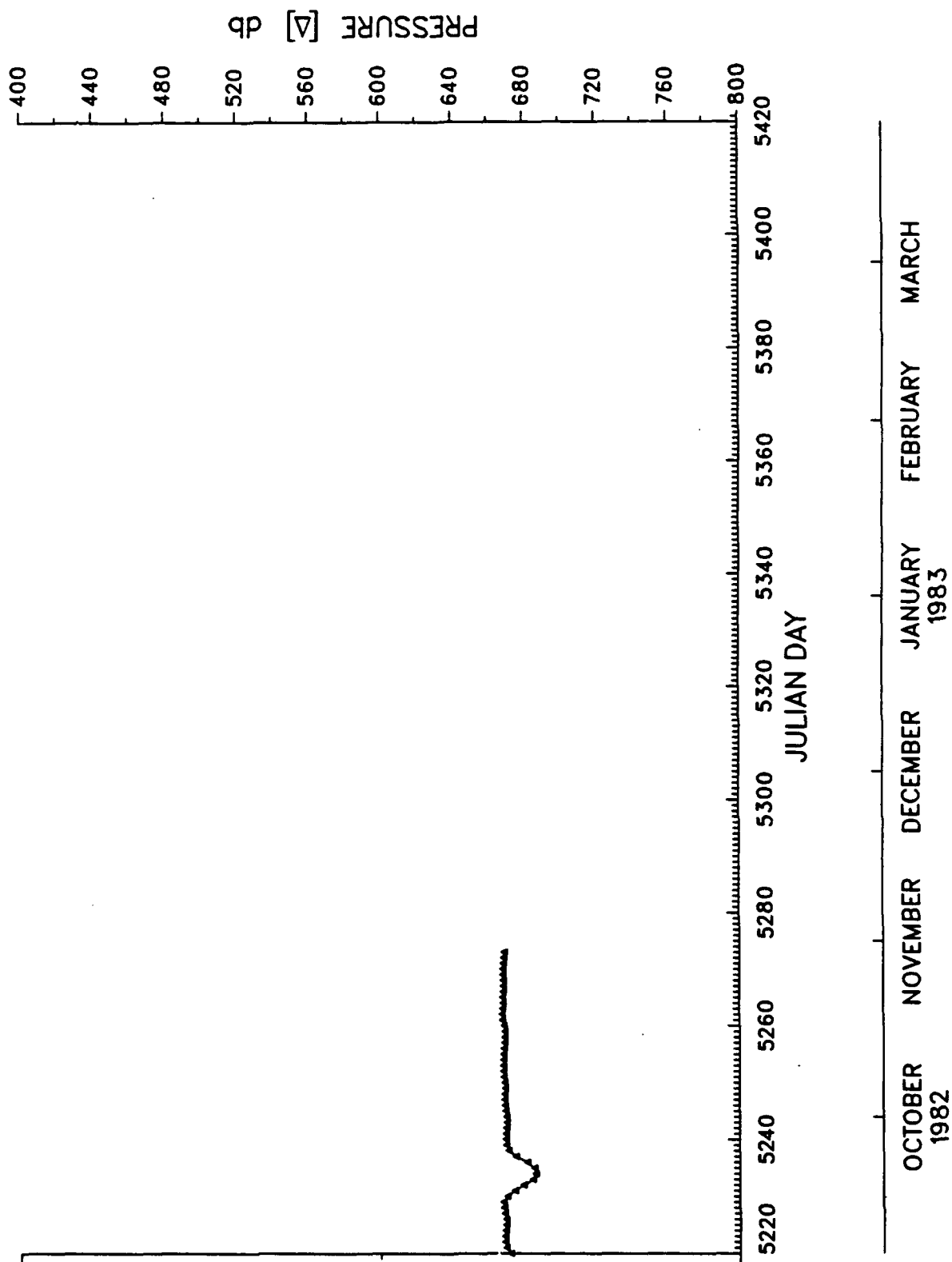


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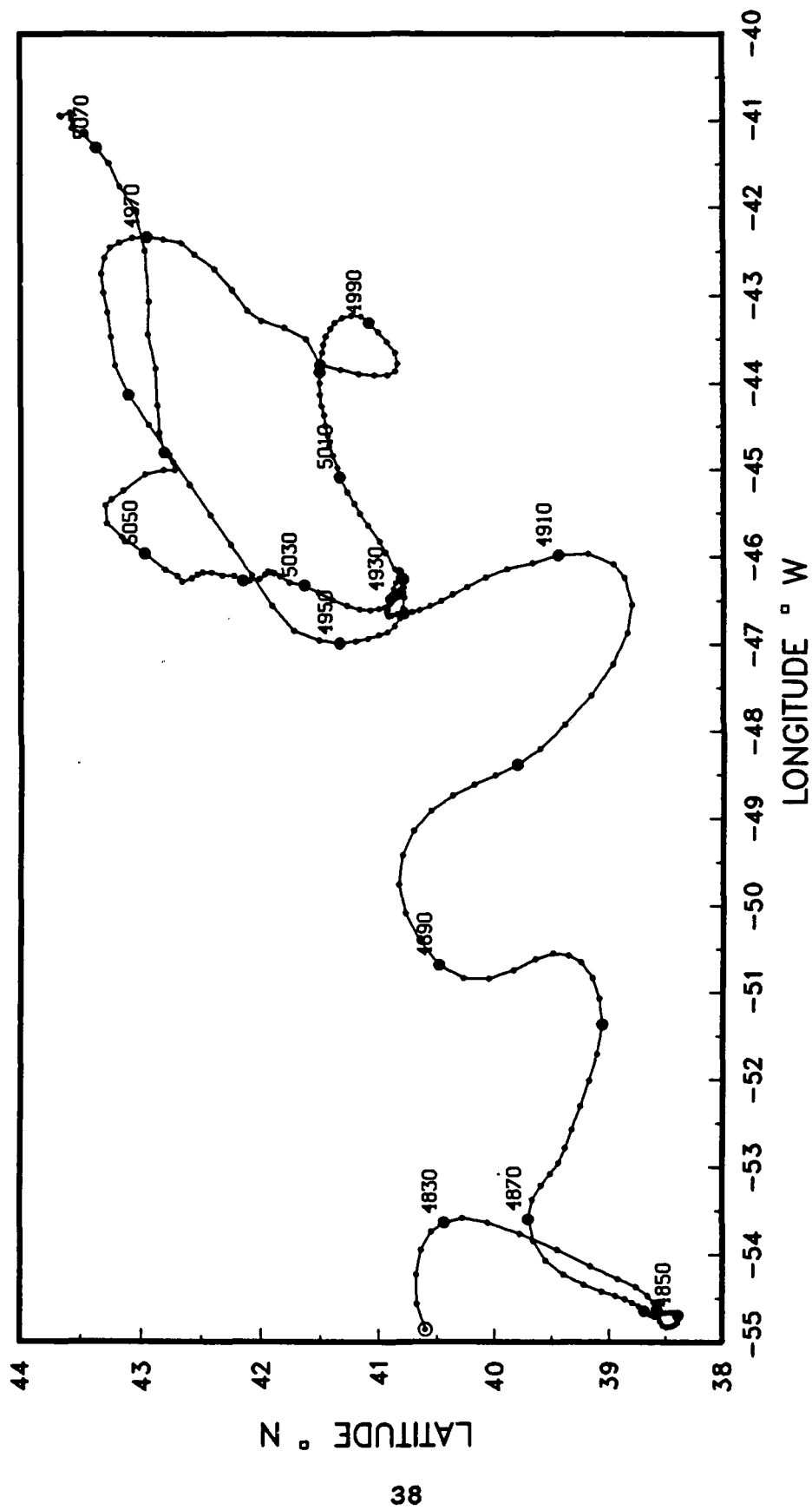




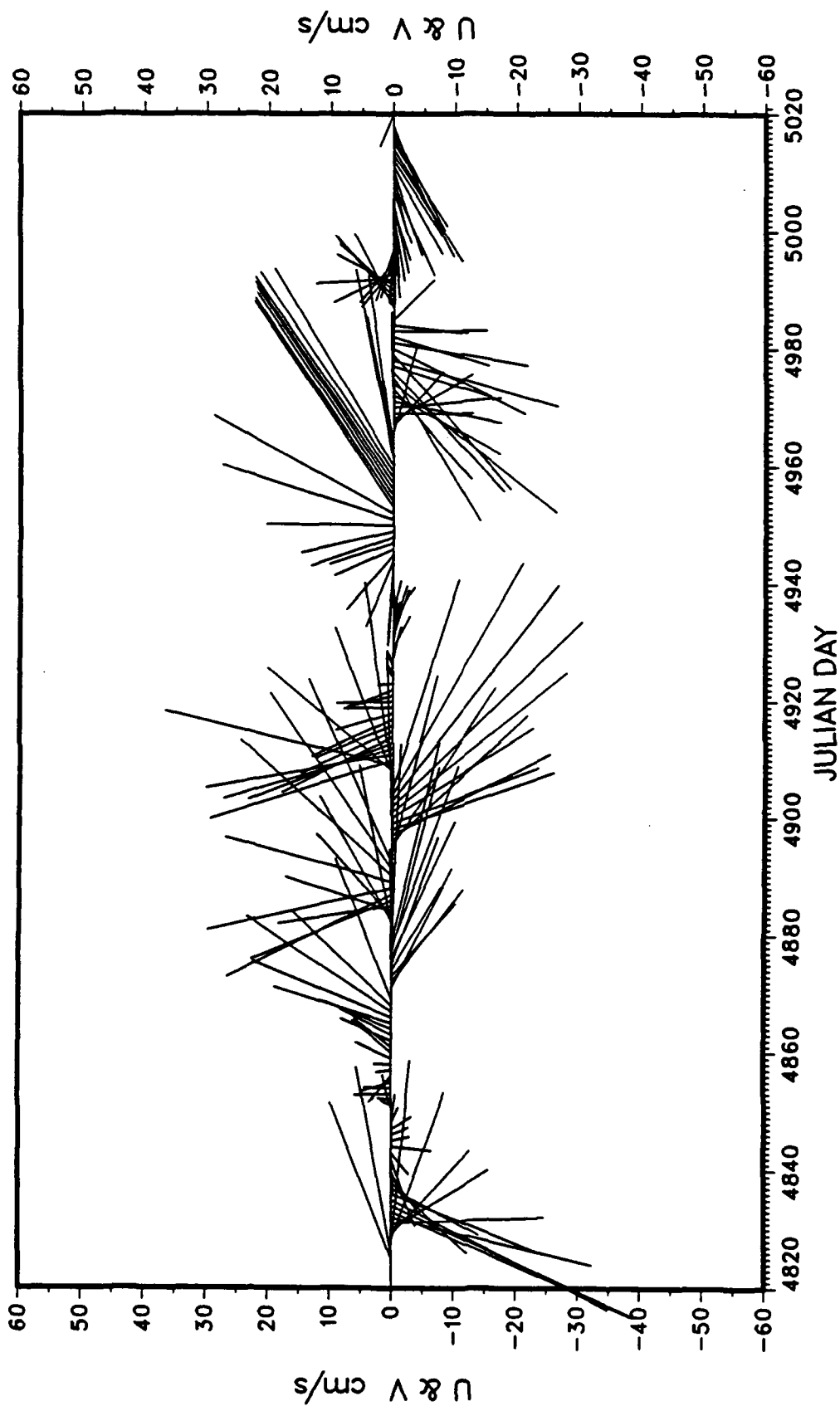
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GUSREX 115A

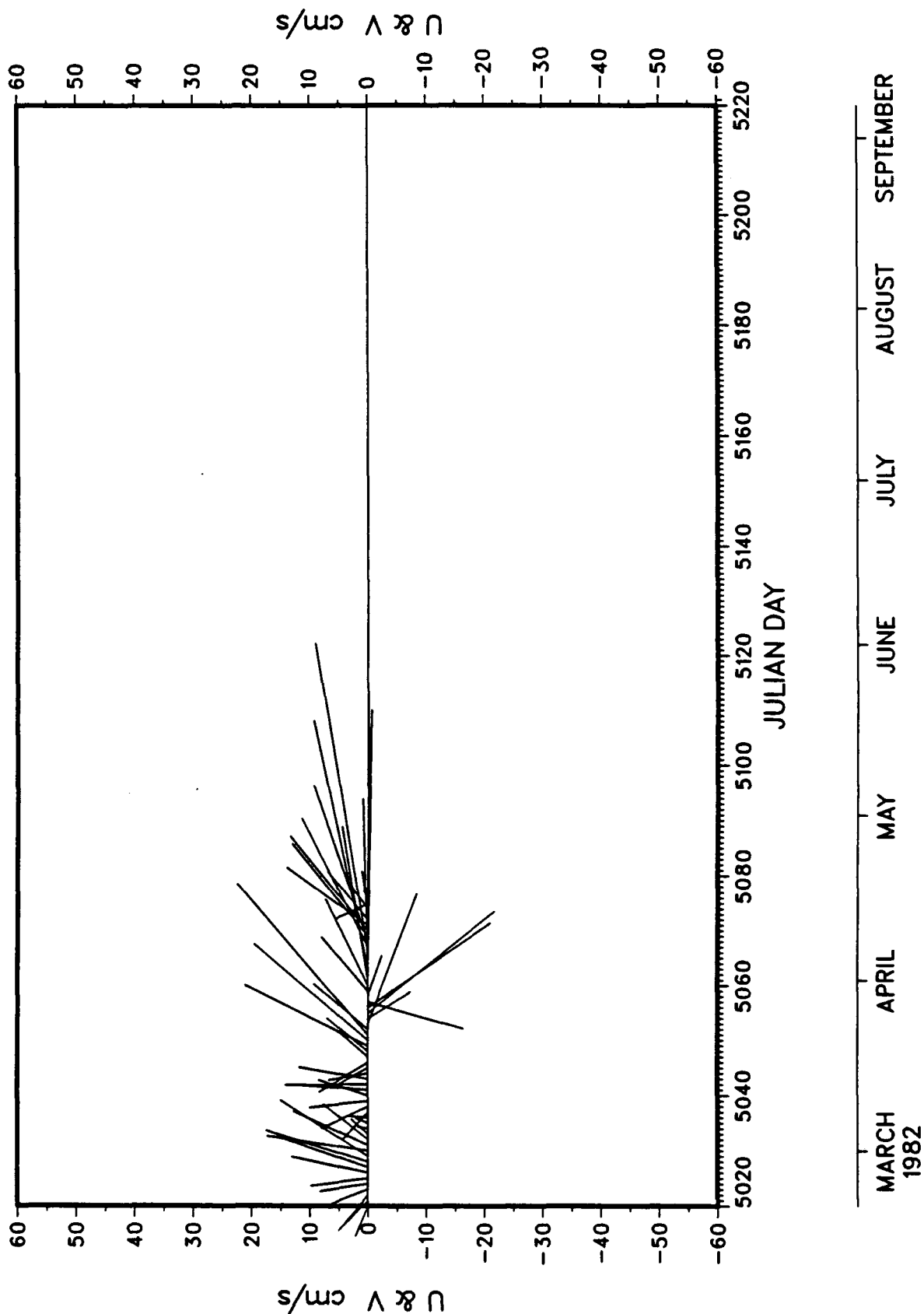


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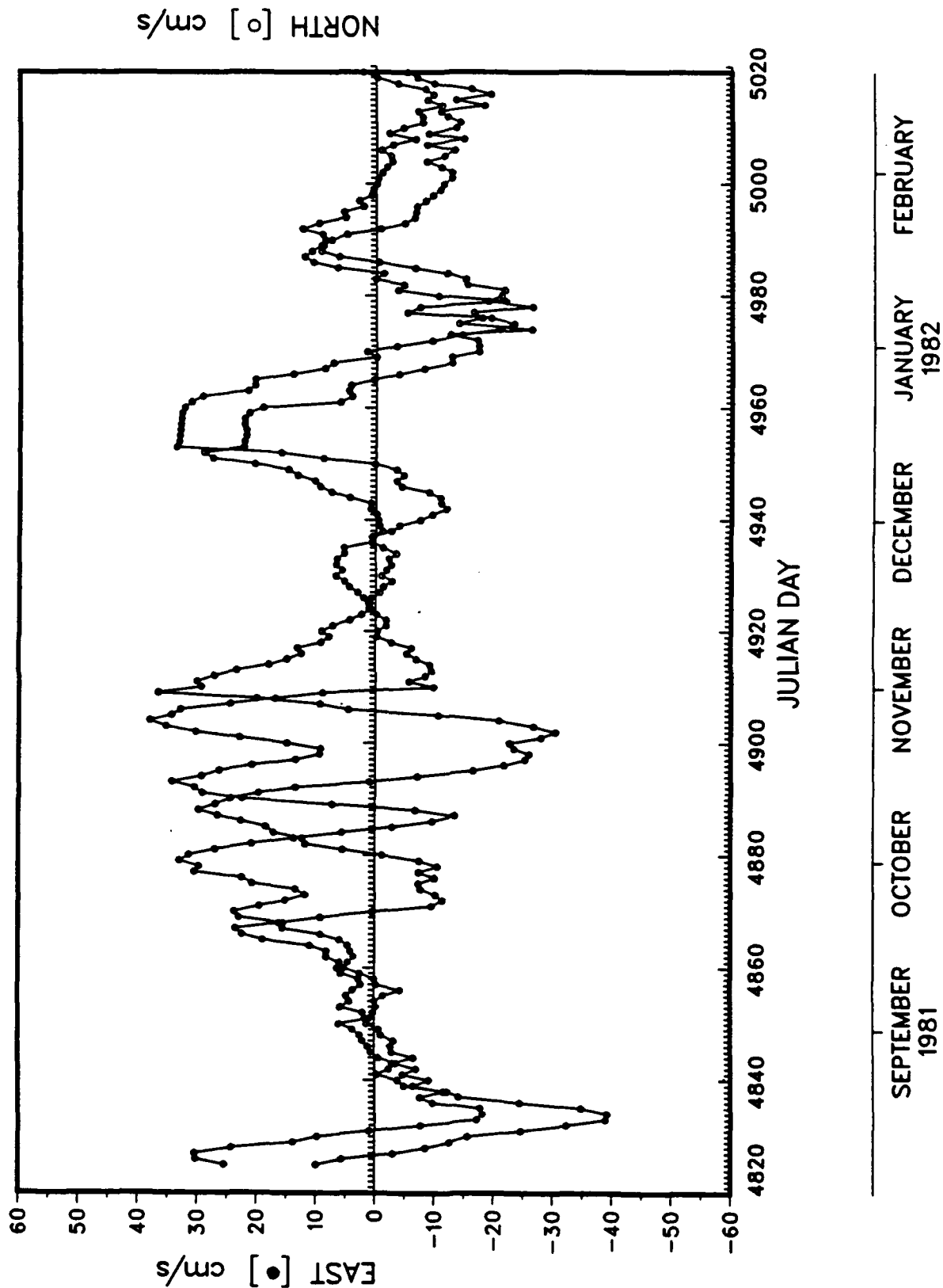


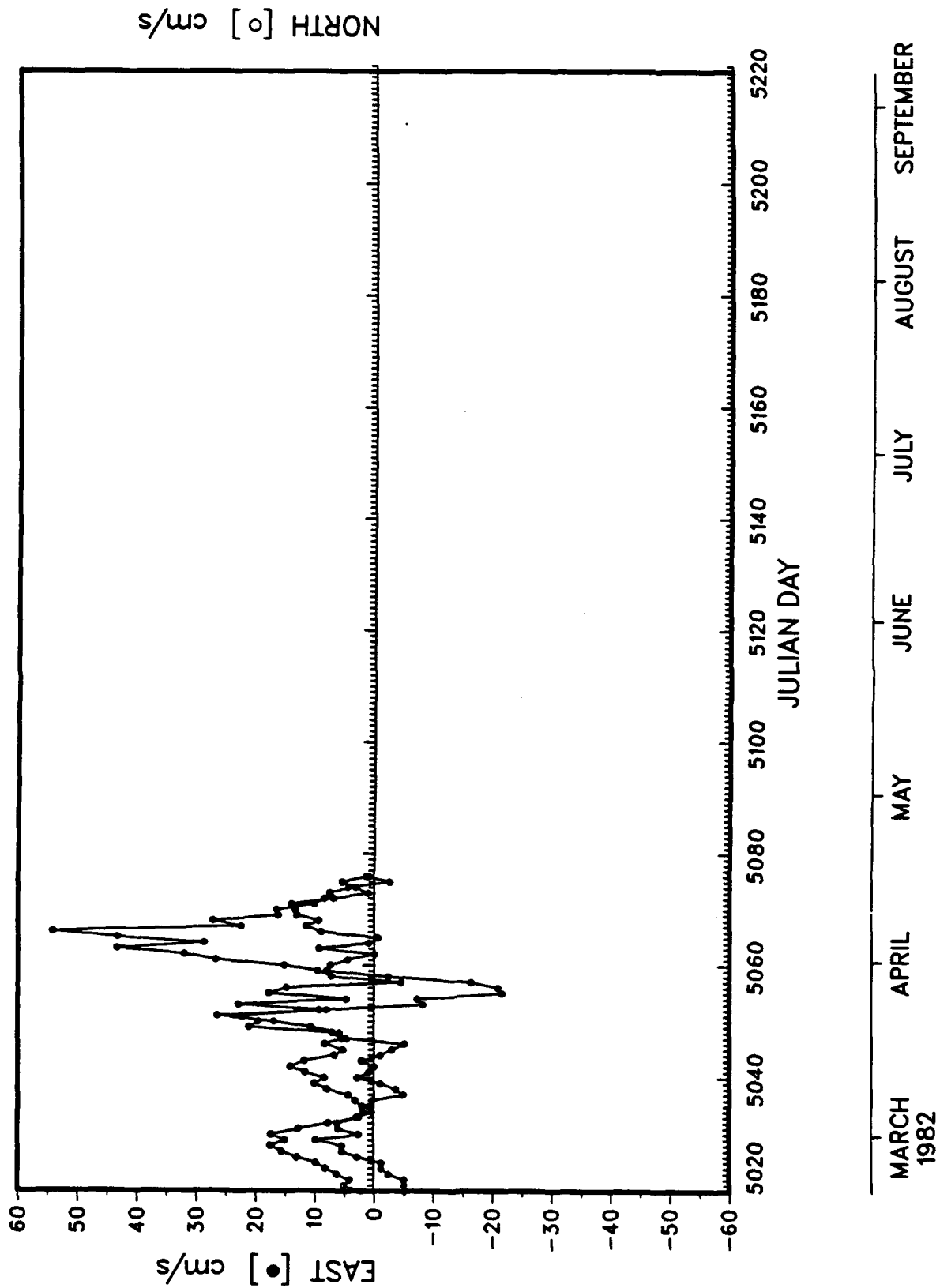
SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

GUSREX 115A

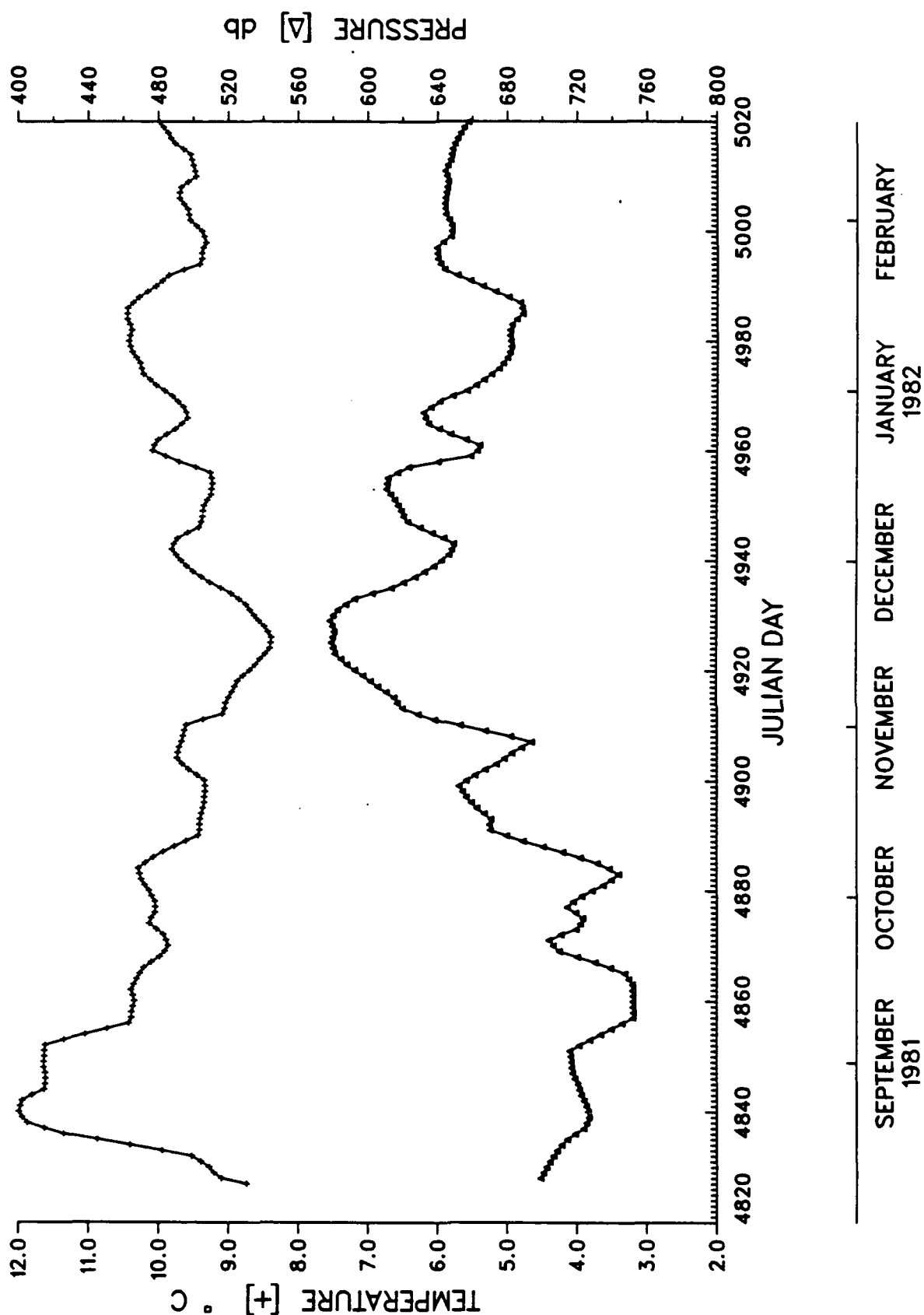


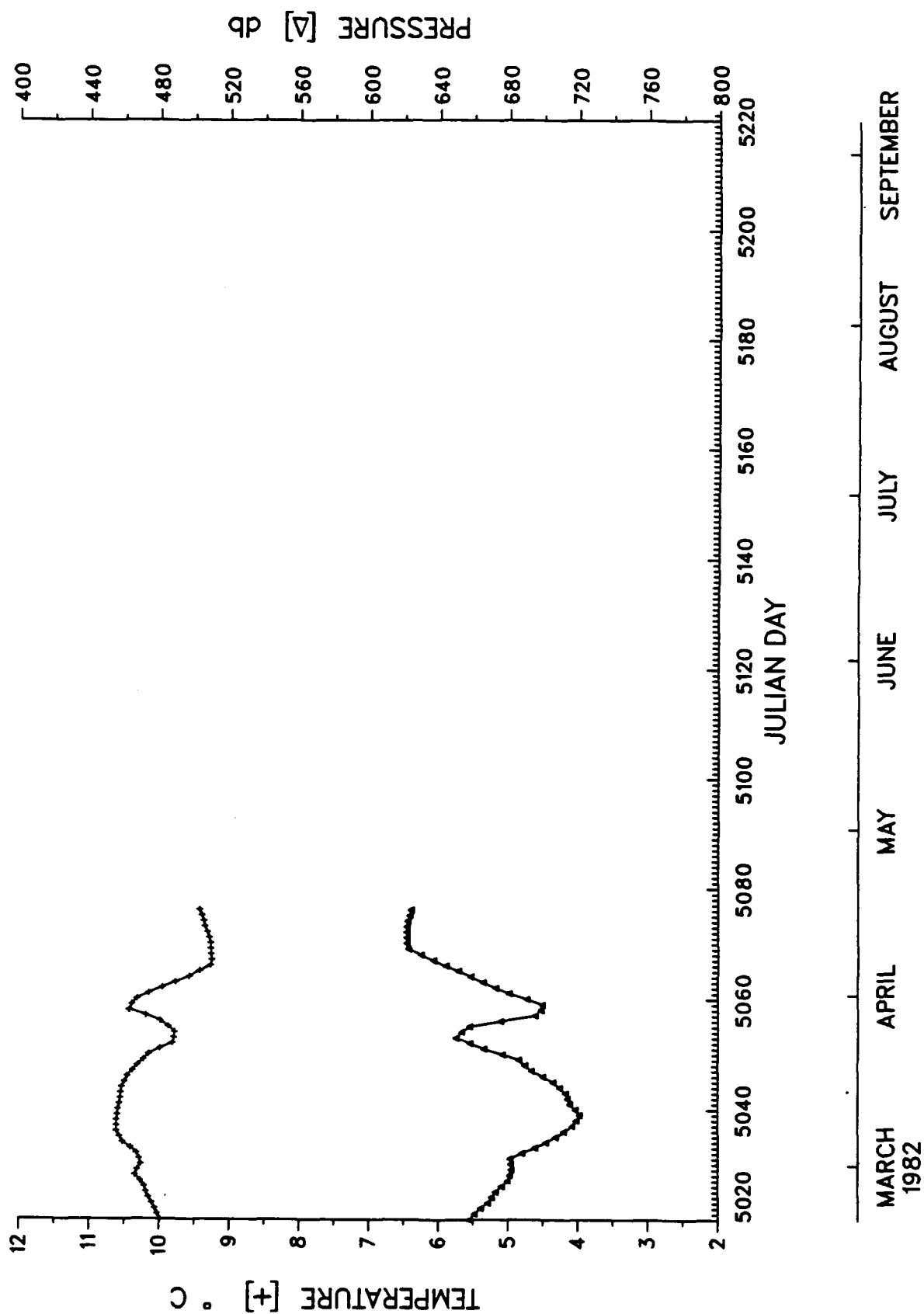
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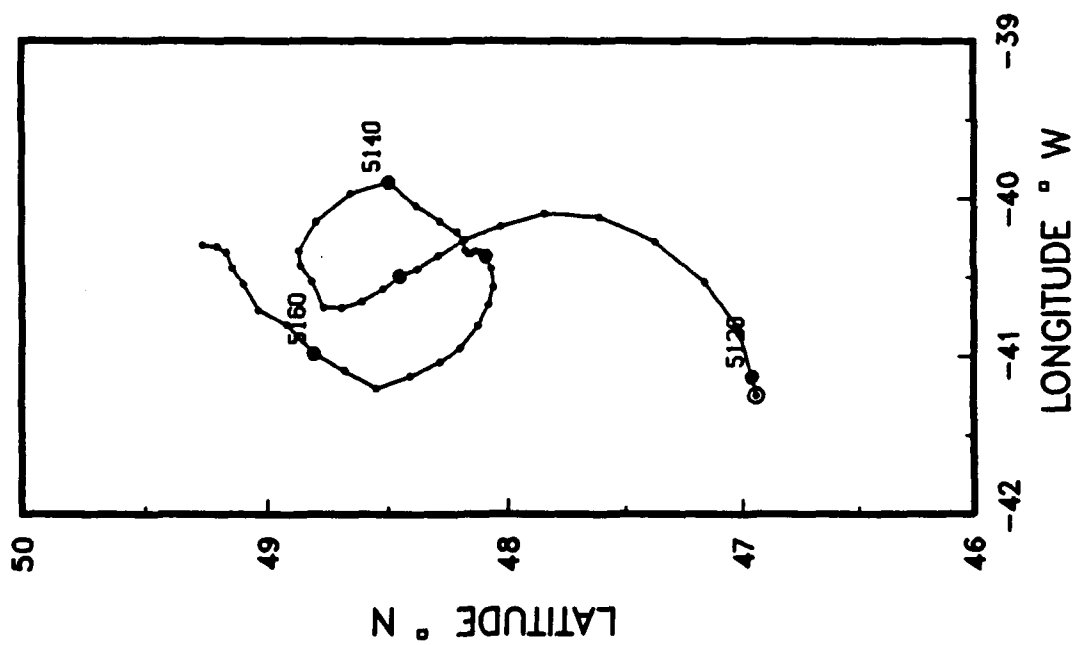


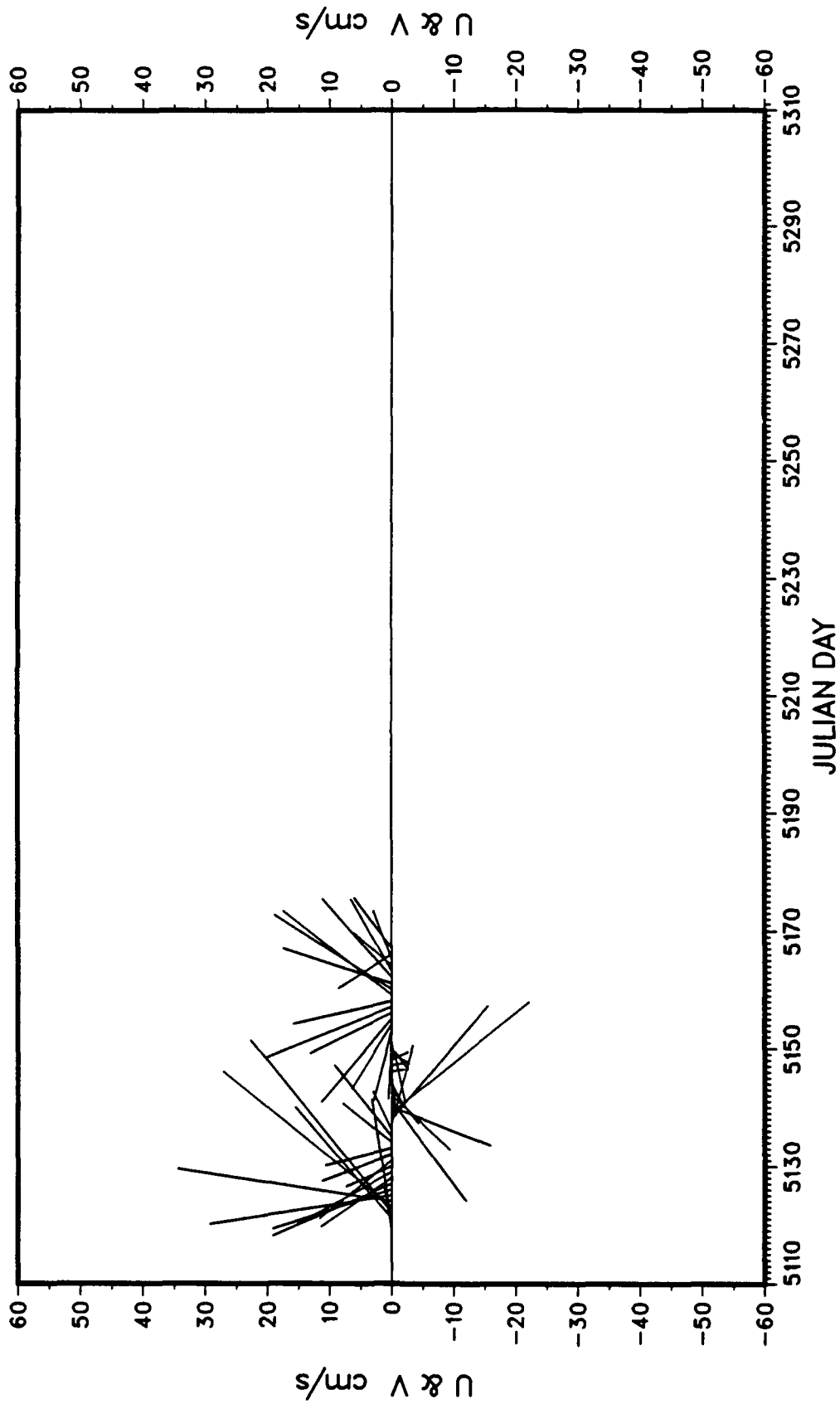
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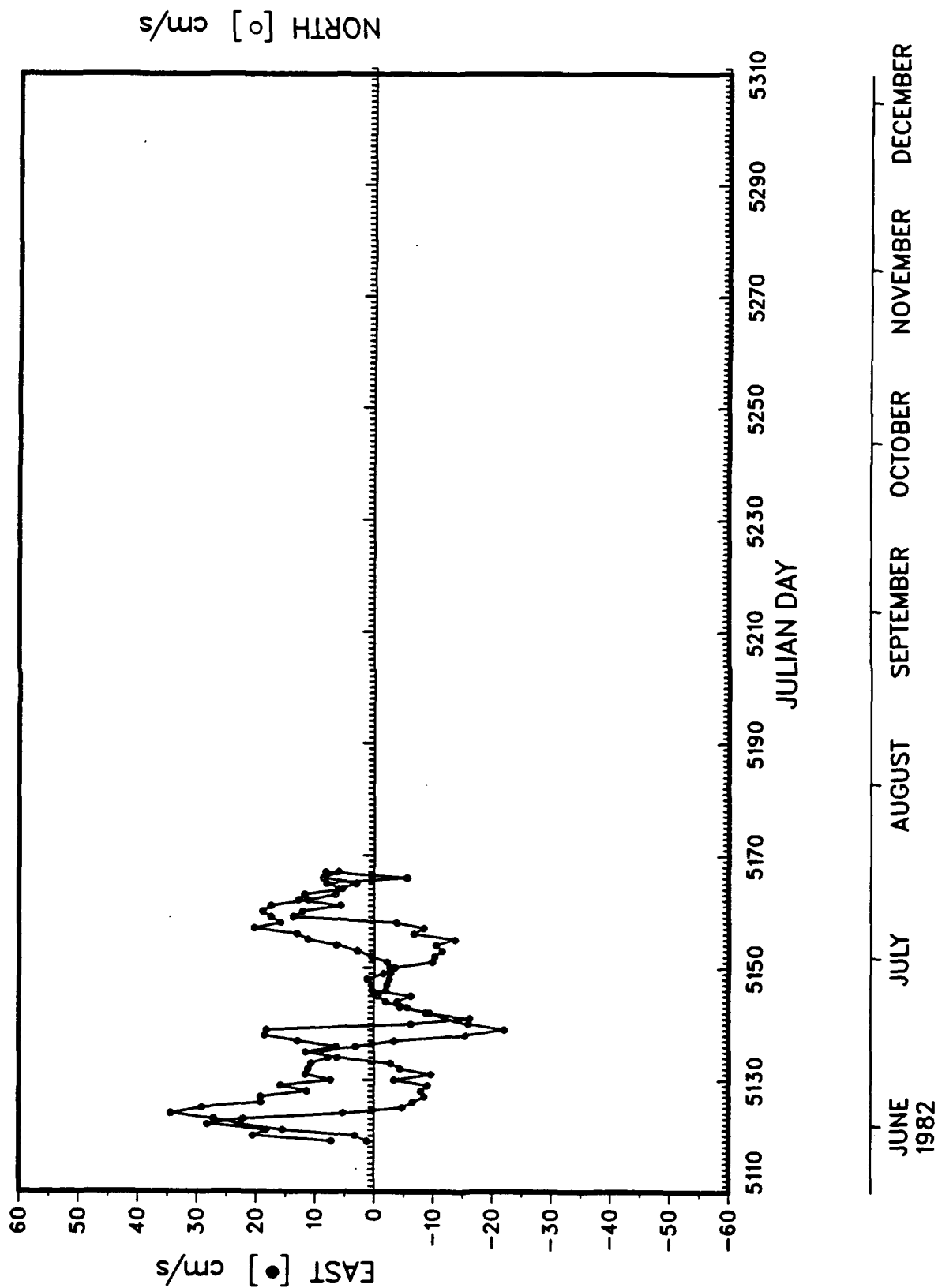
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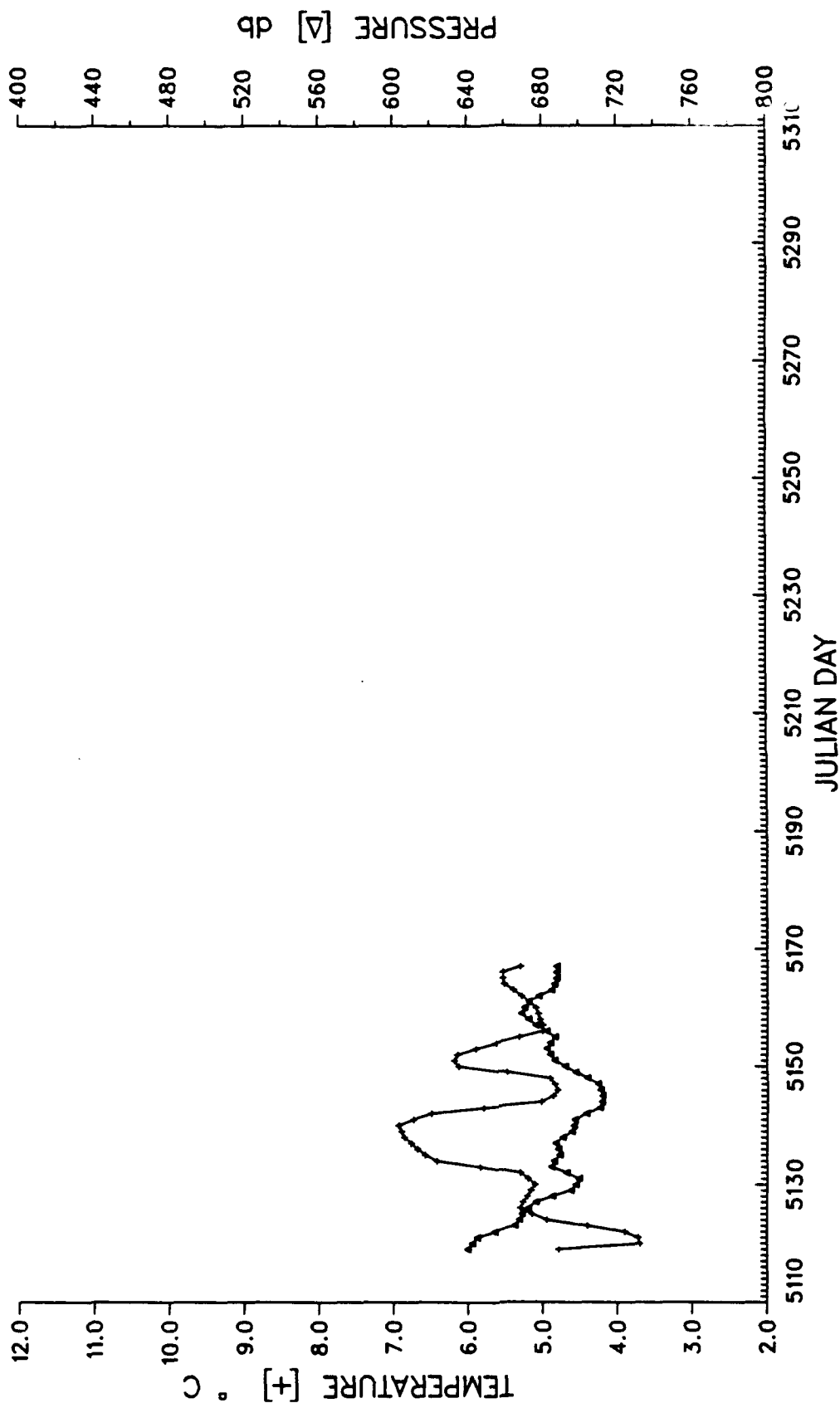




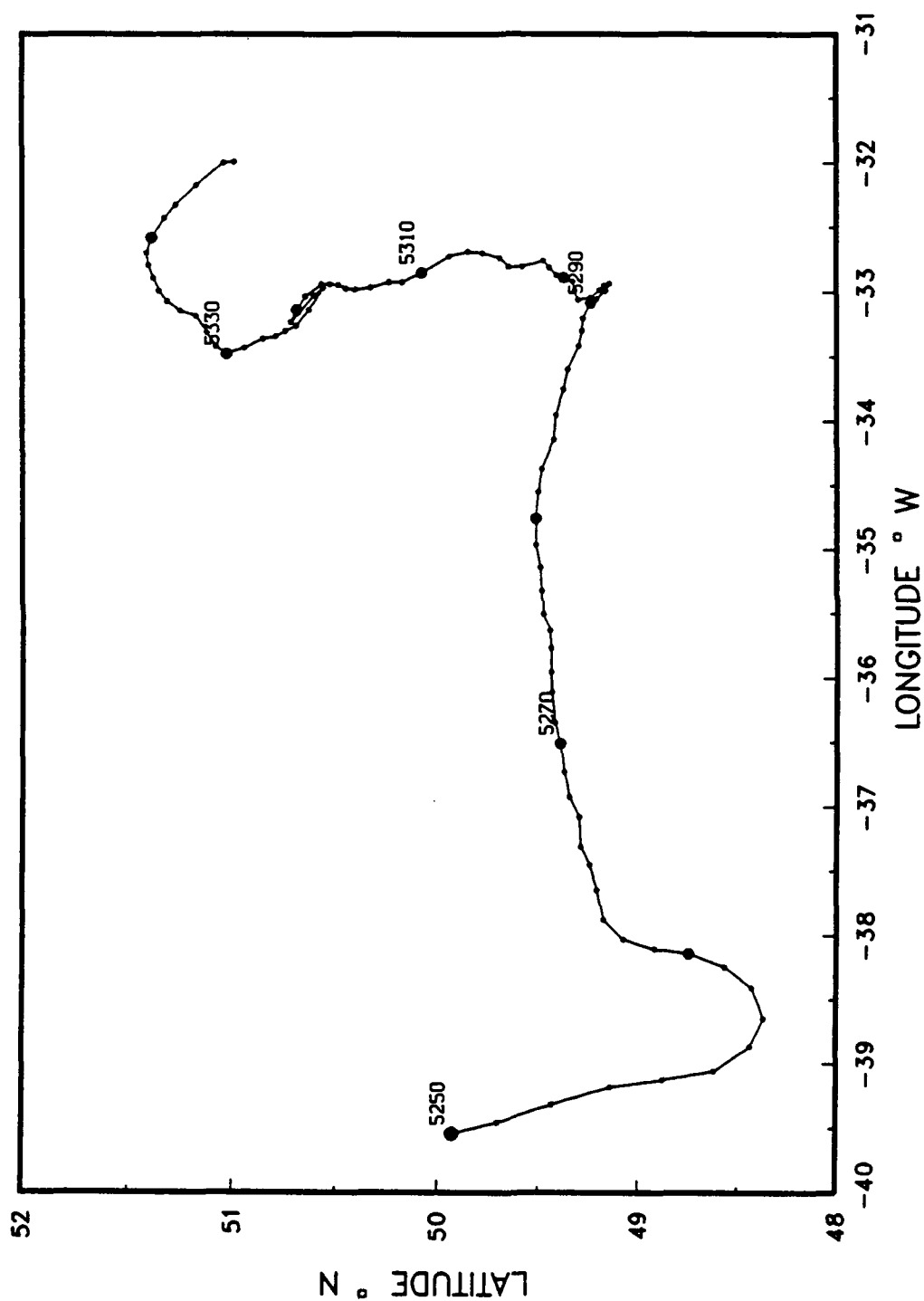
JUNE 1982 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

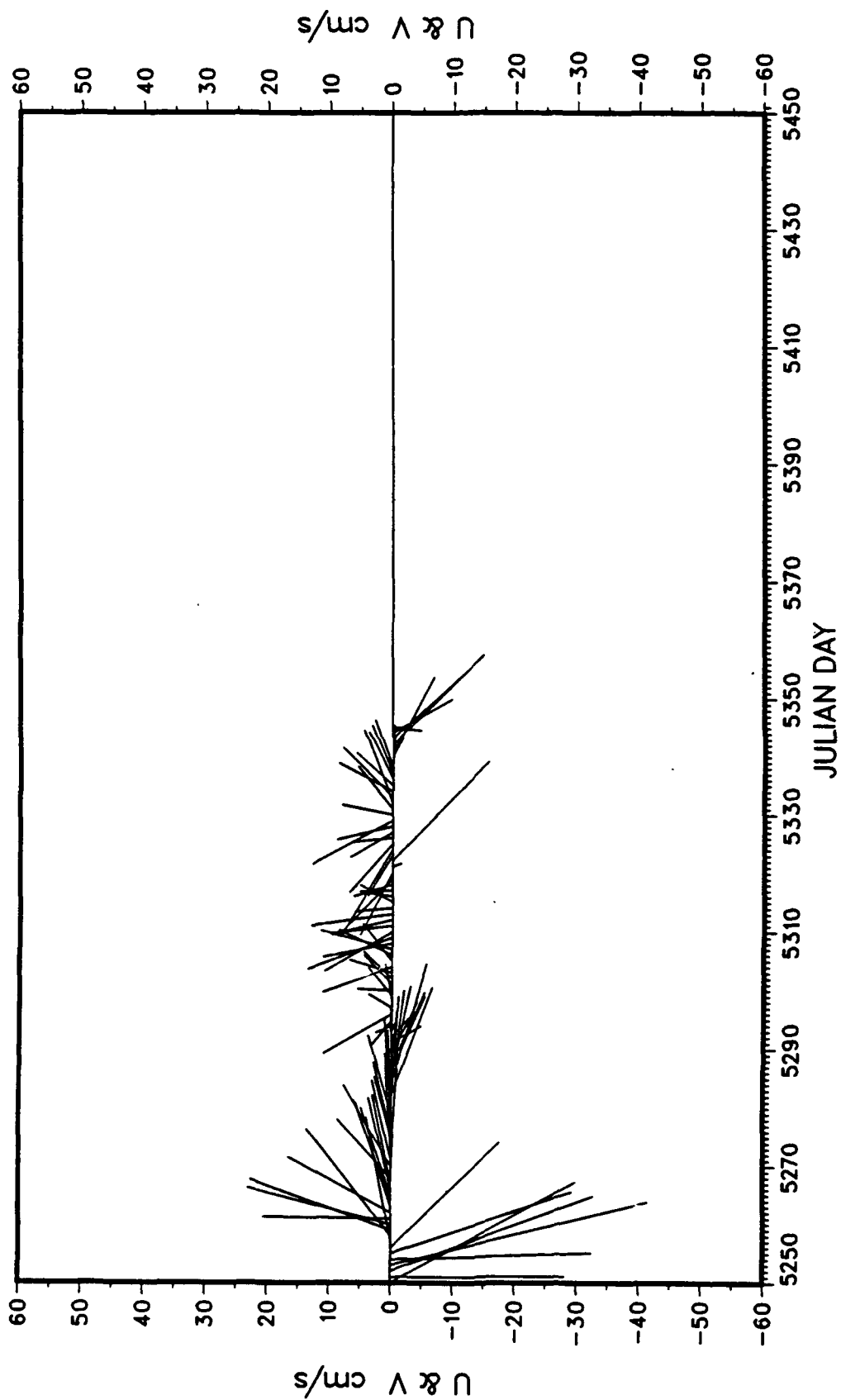
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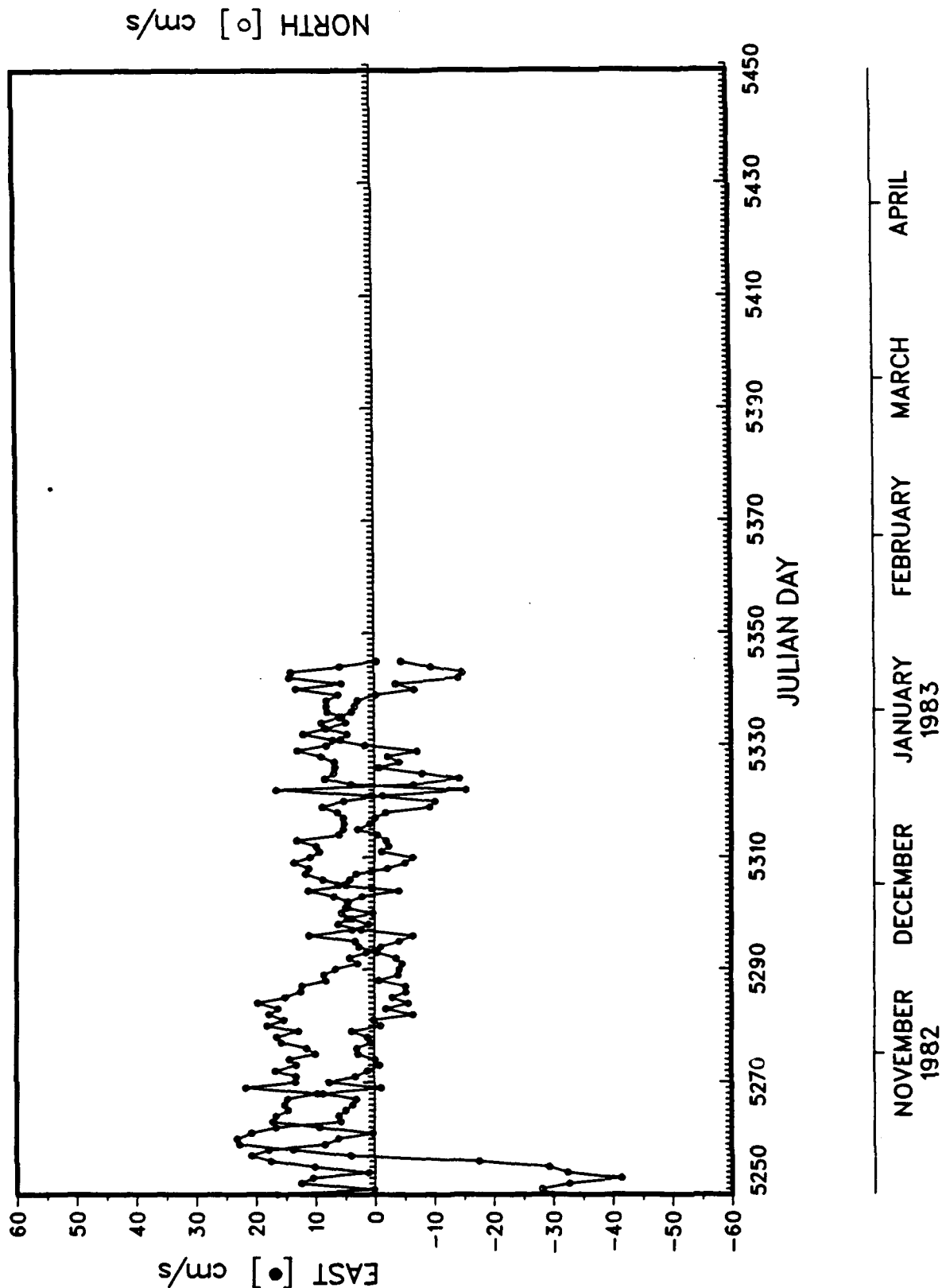
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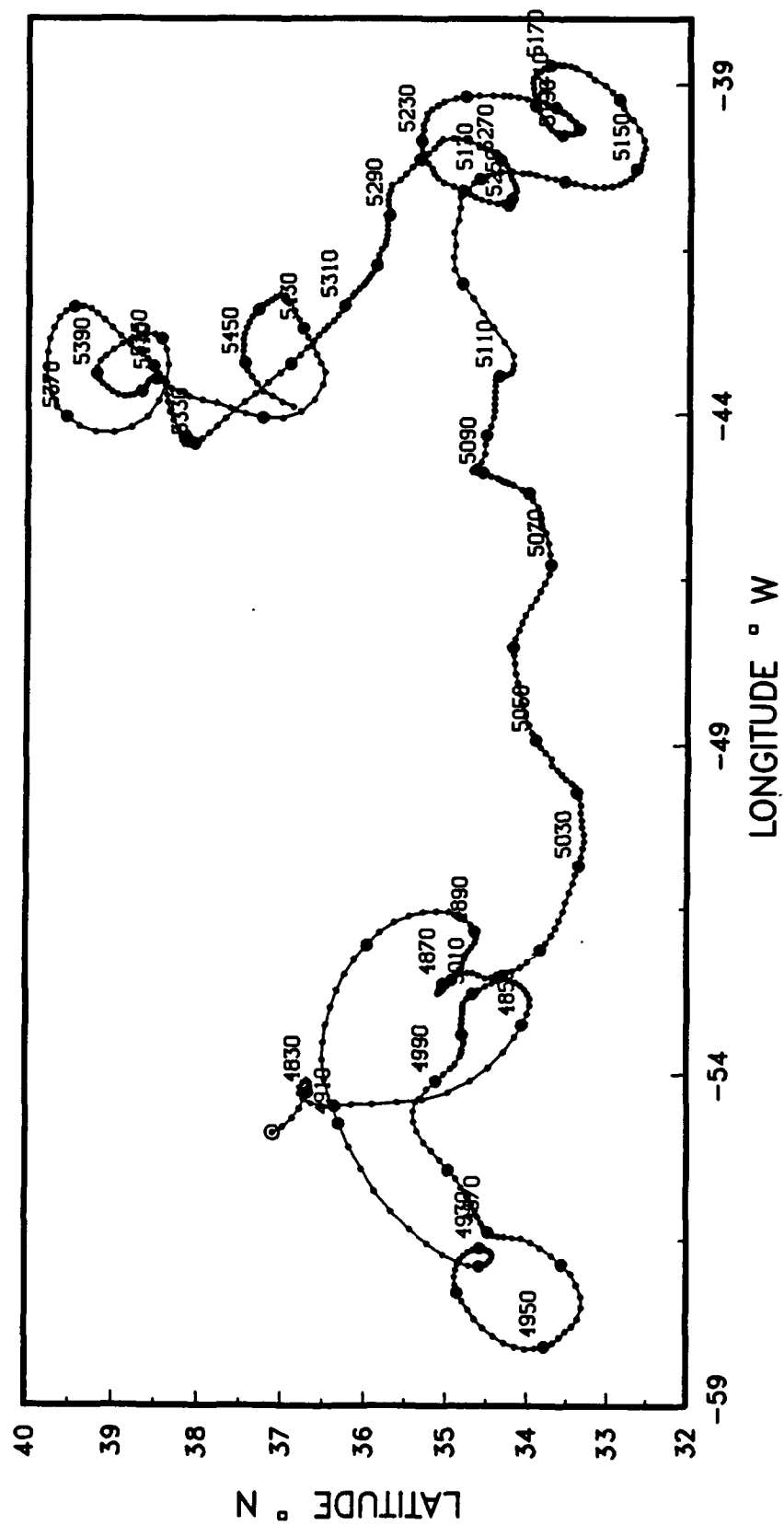


NOVEMBER 1982 DECEMBER 1982 JANUARY 1983 FEBRUARY 1983 MARCH 1983 APRIL 1983

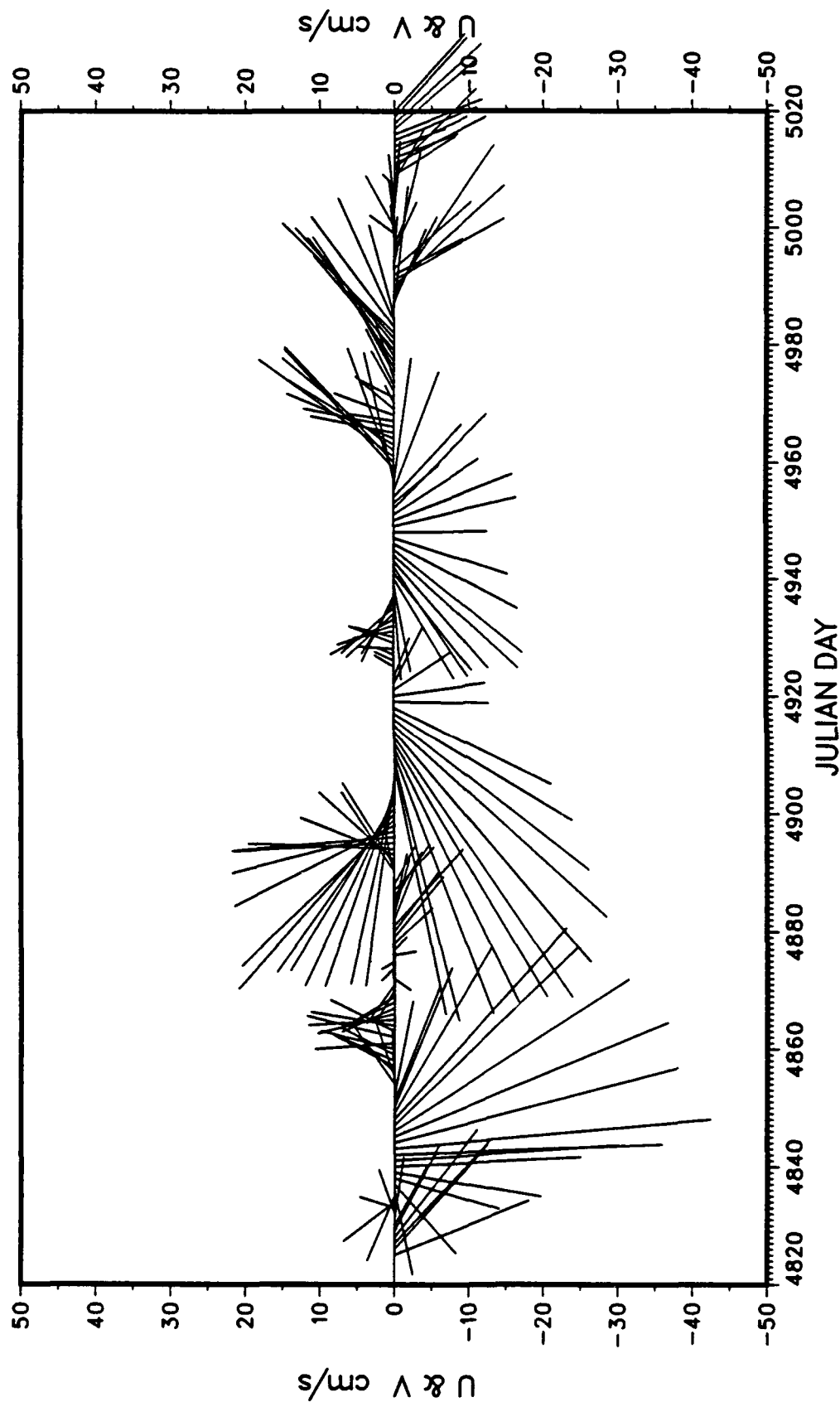
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GUSREX 116A

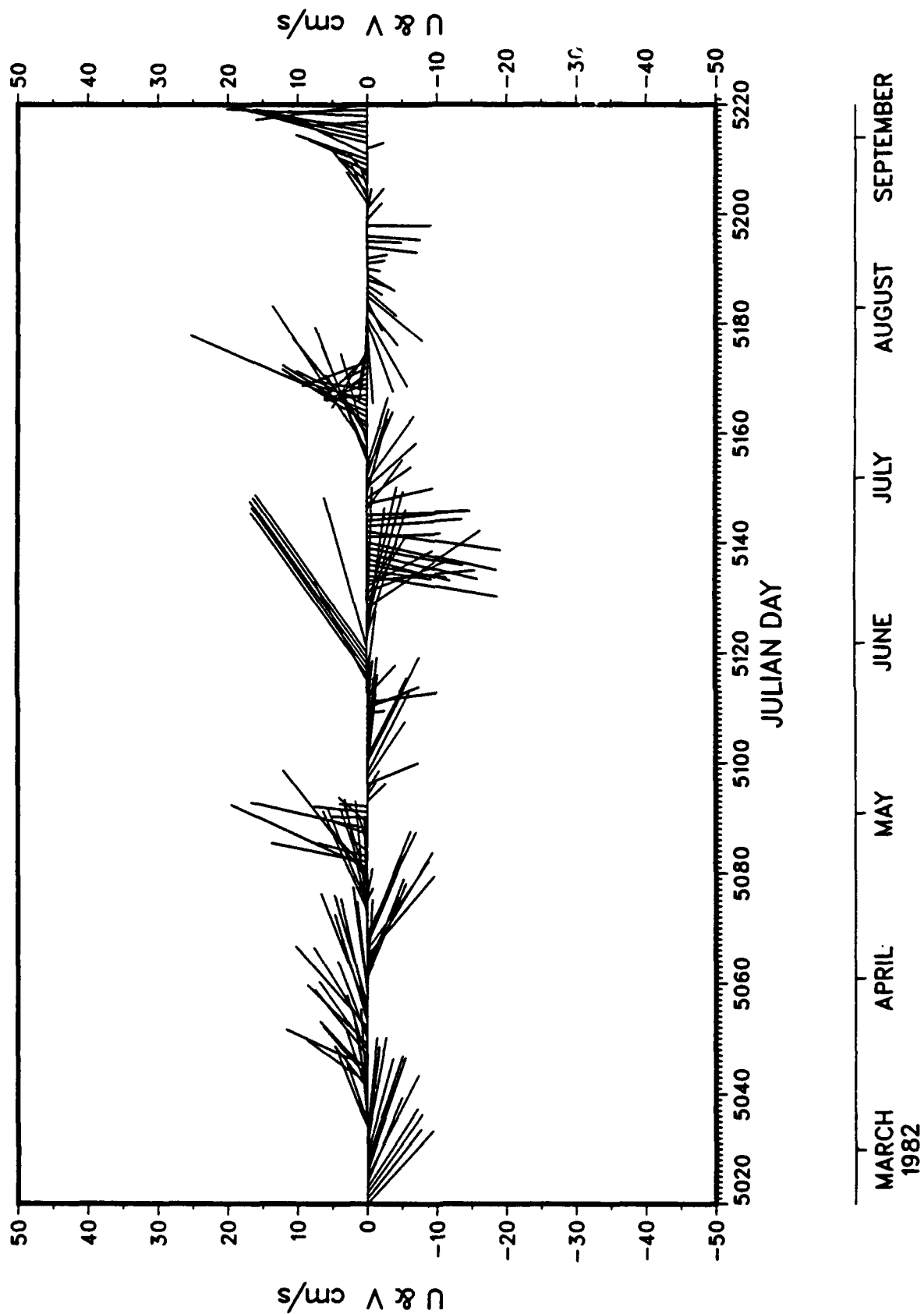


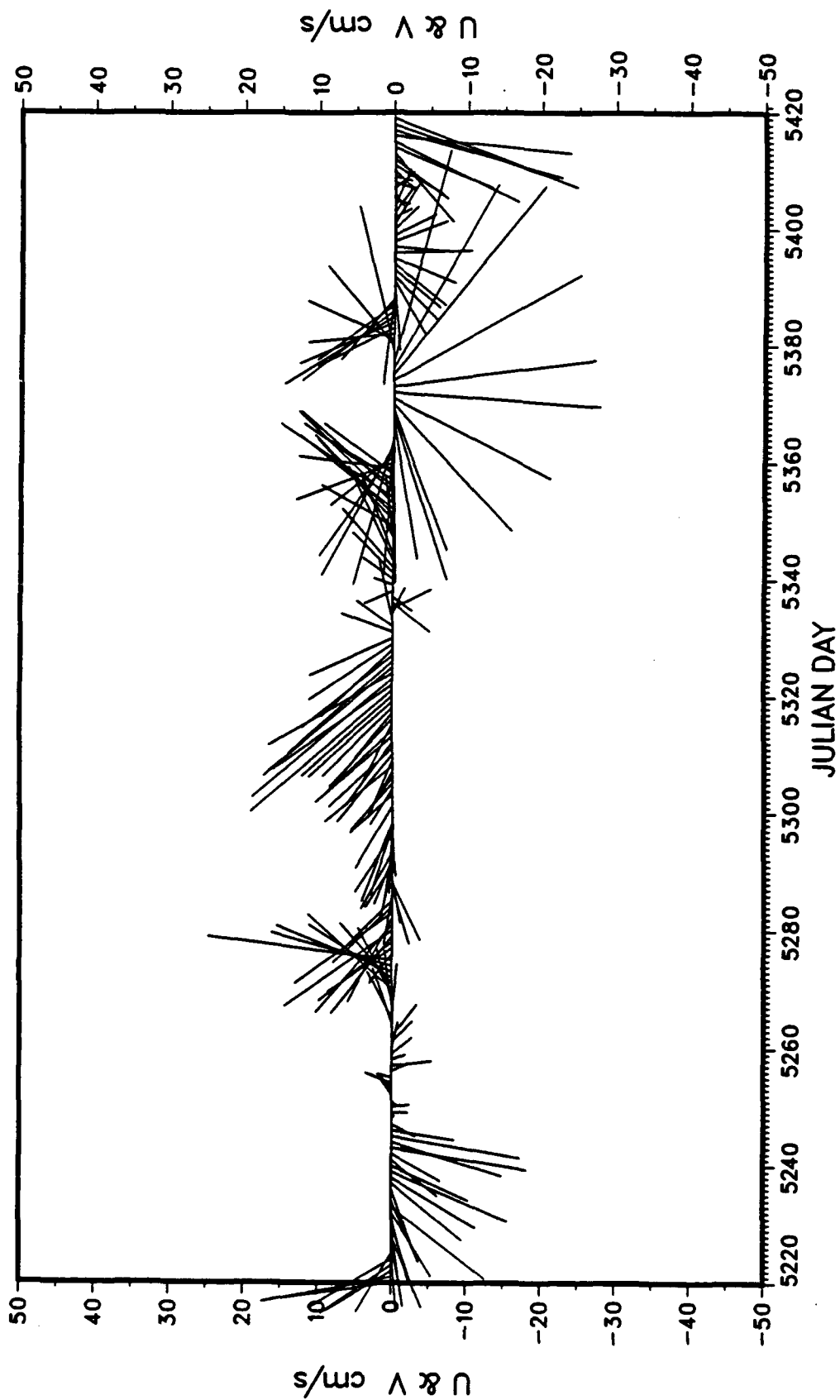
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SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

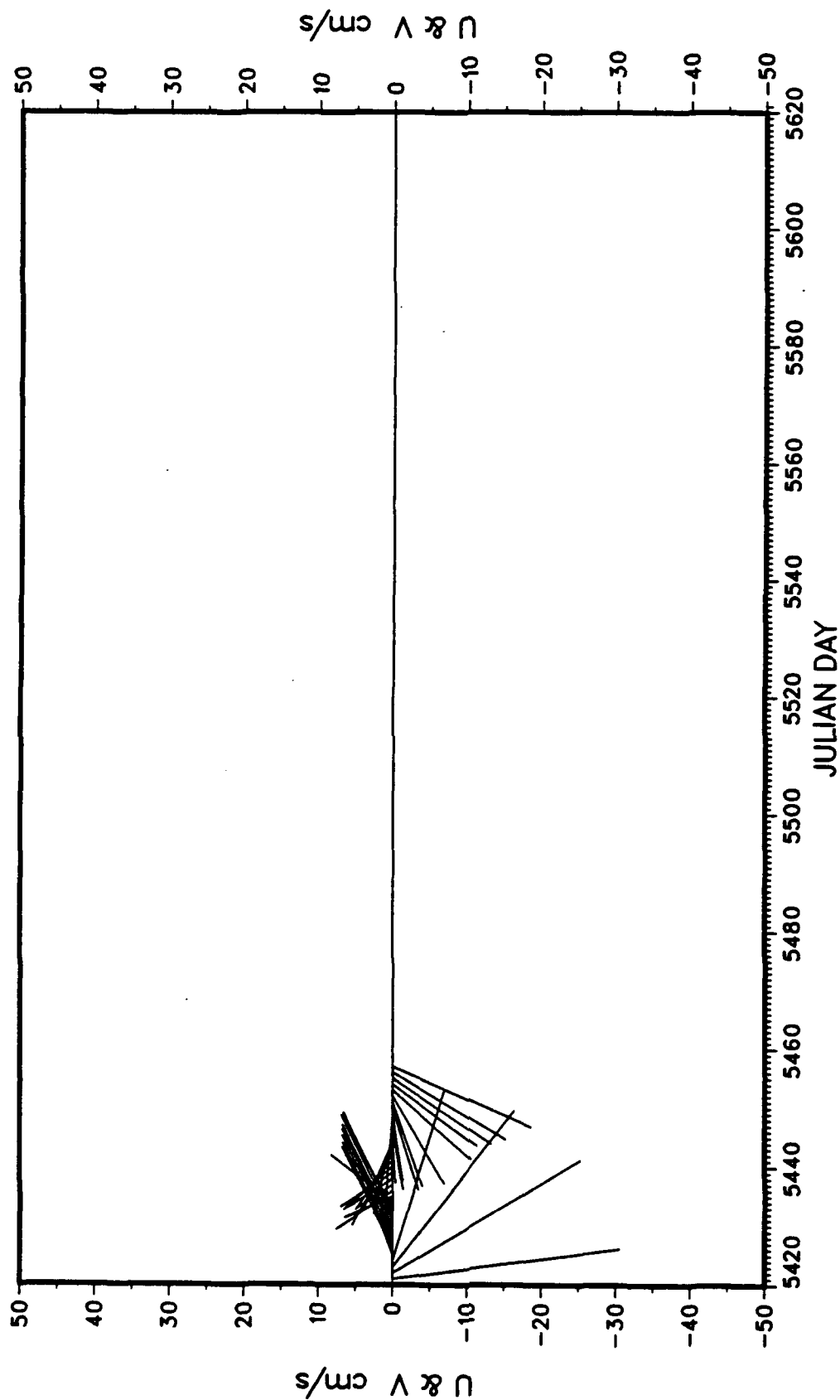
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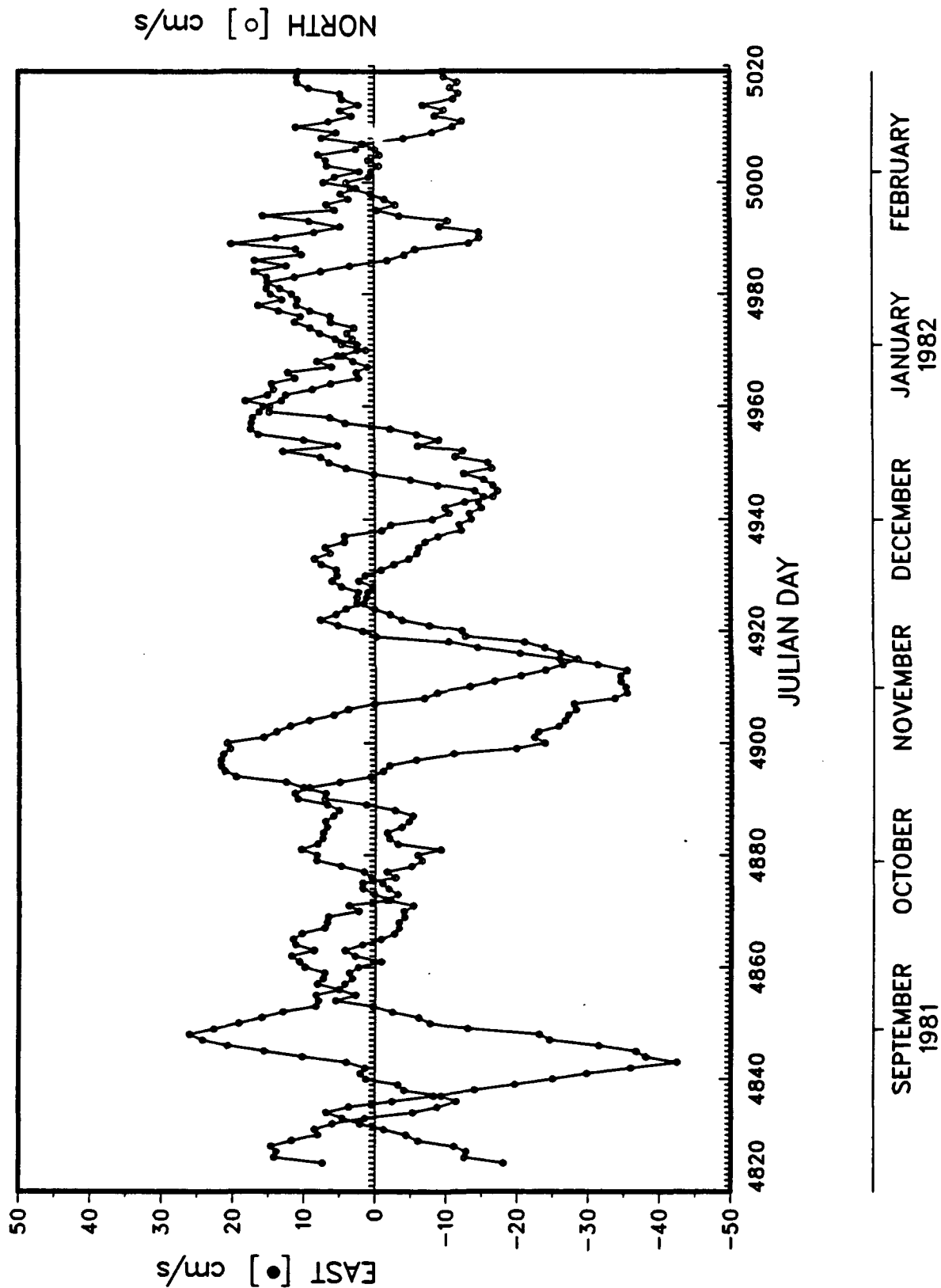


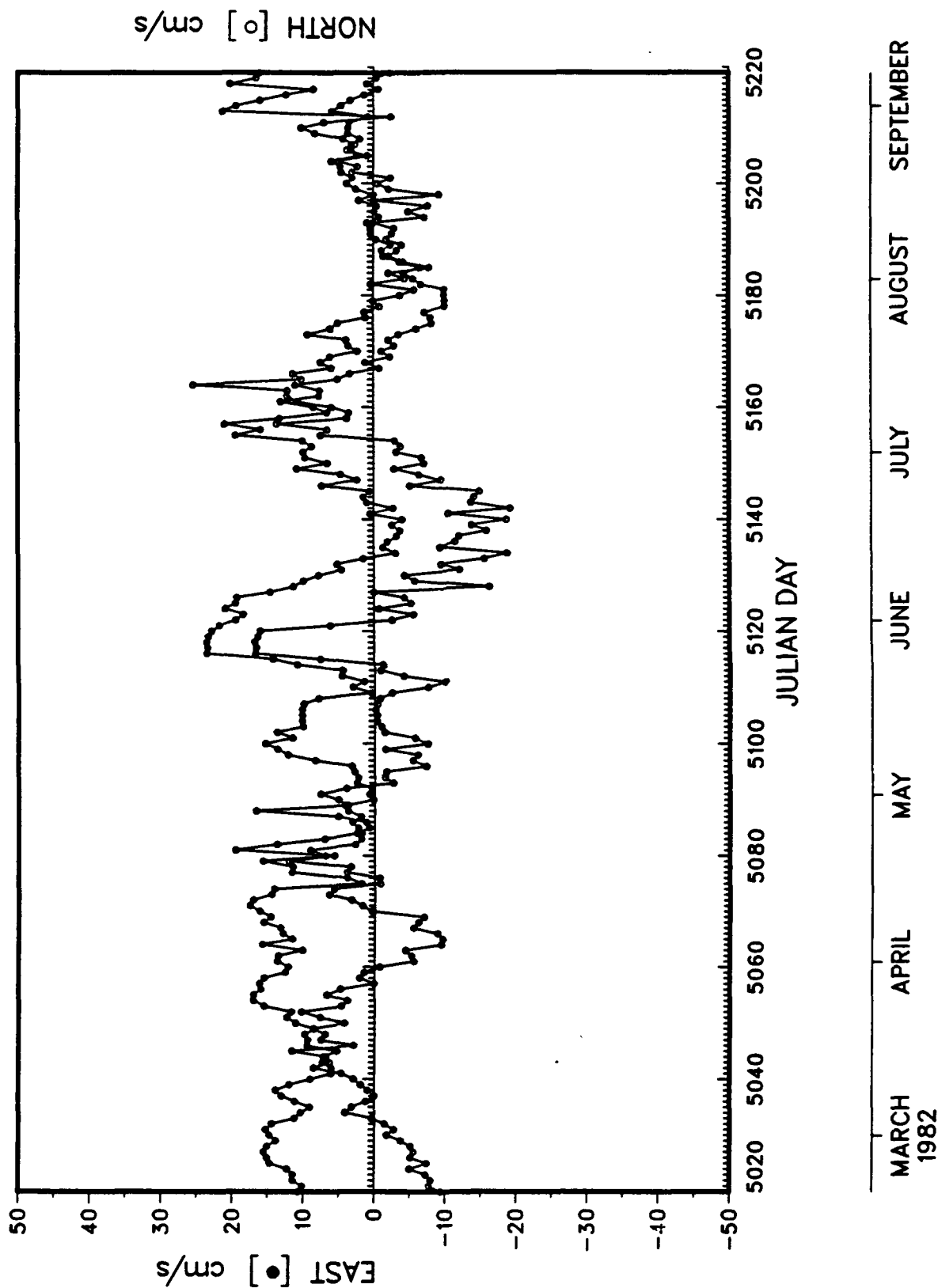
OCTOBER 1982 NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

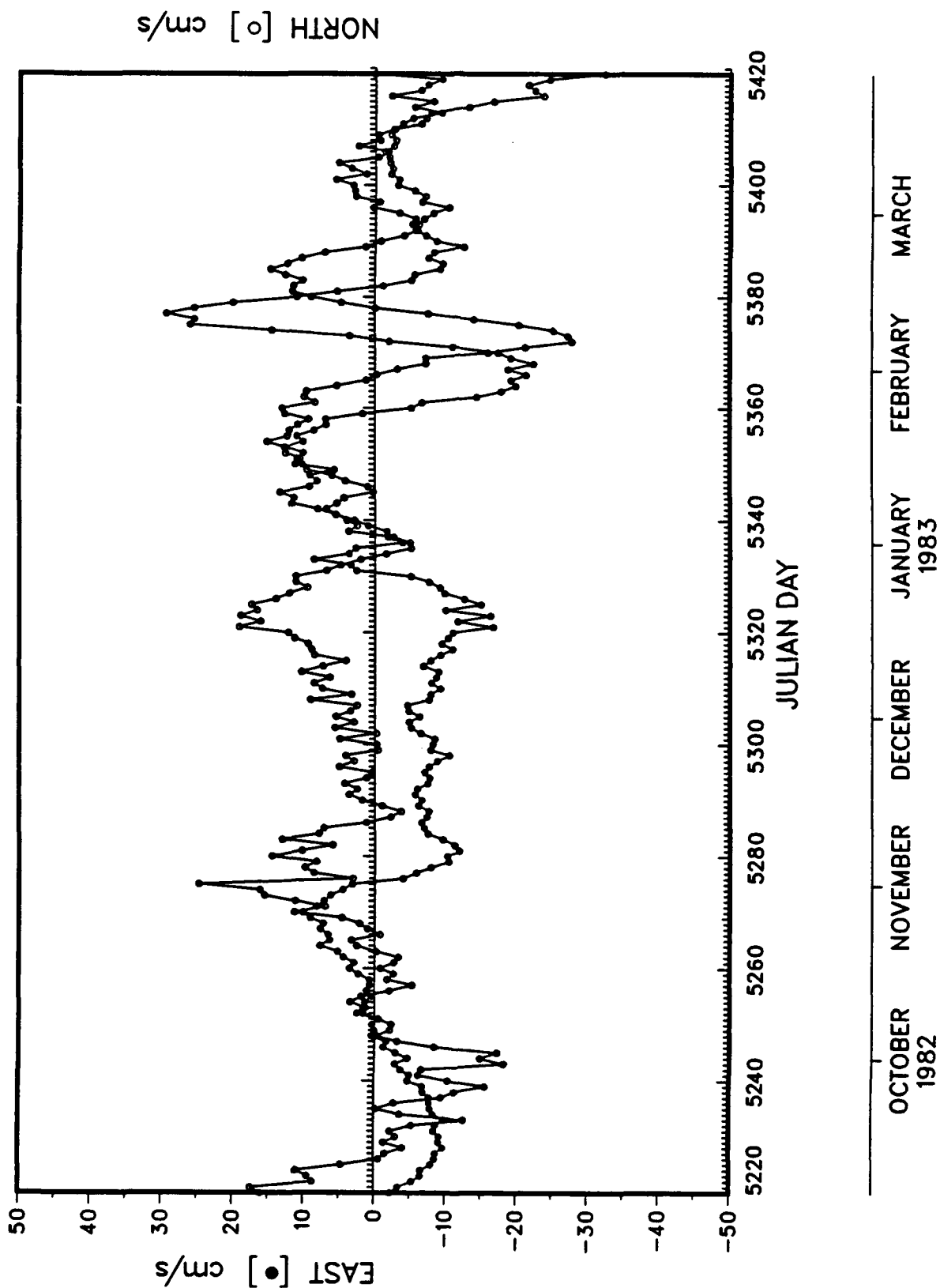
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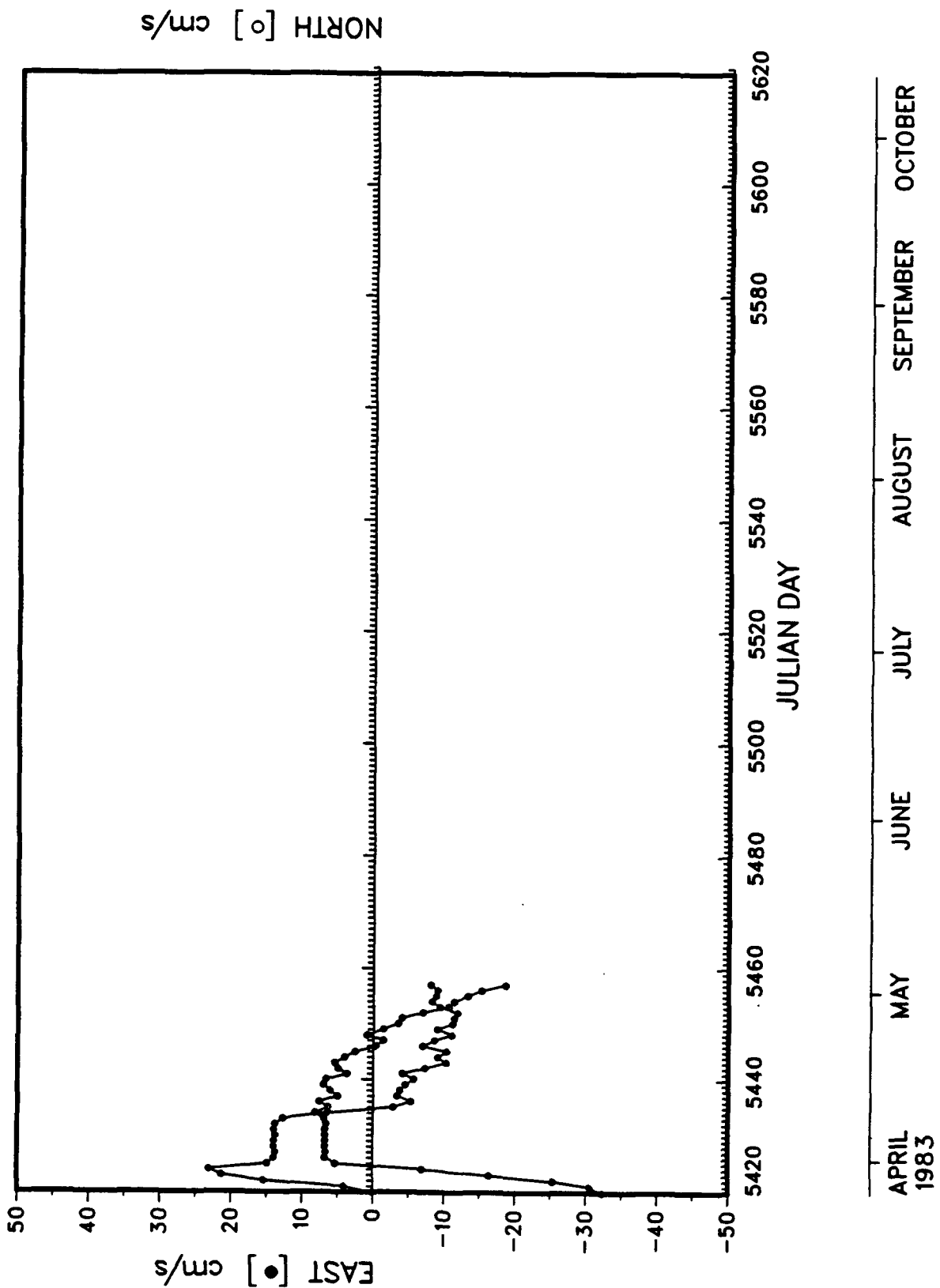


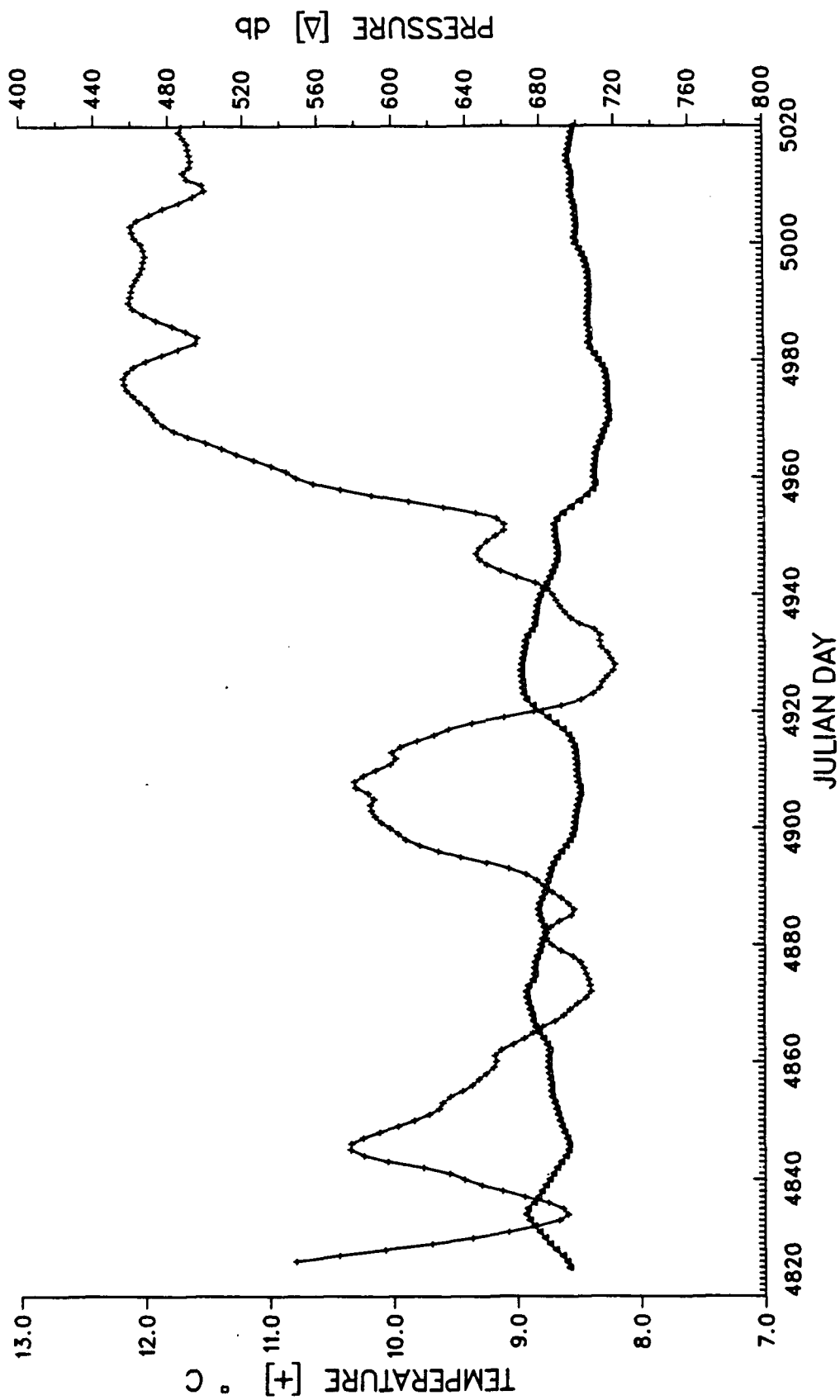
APRIL 1983 MAY JUNE JULY AUGUST SEPTEMBER OCTOBER



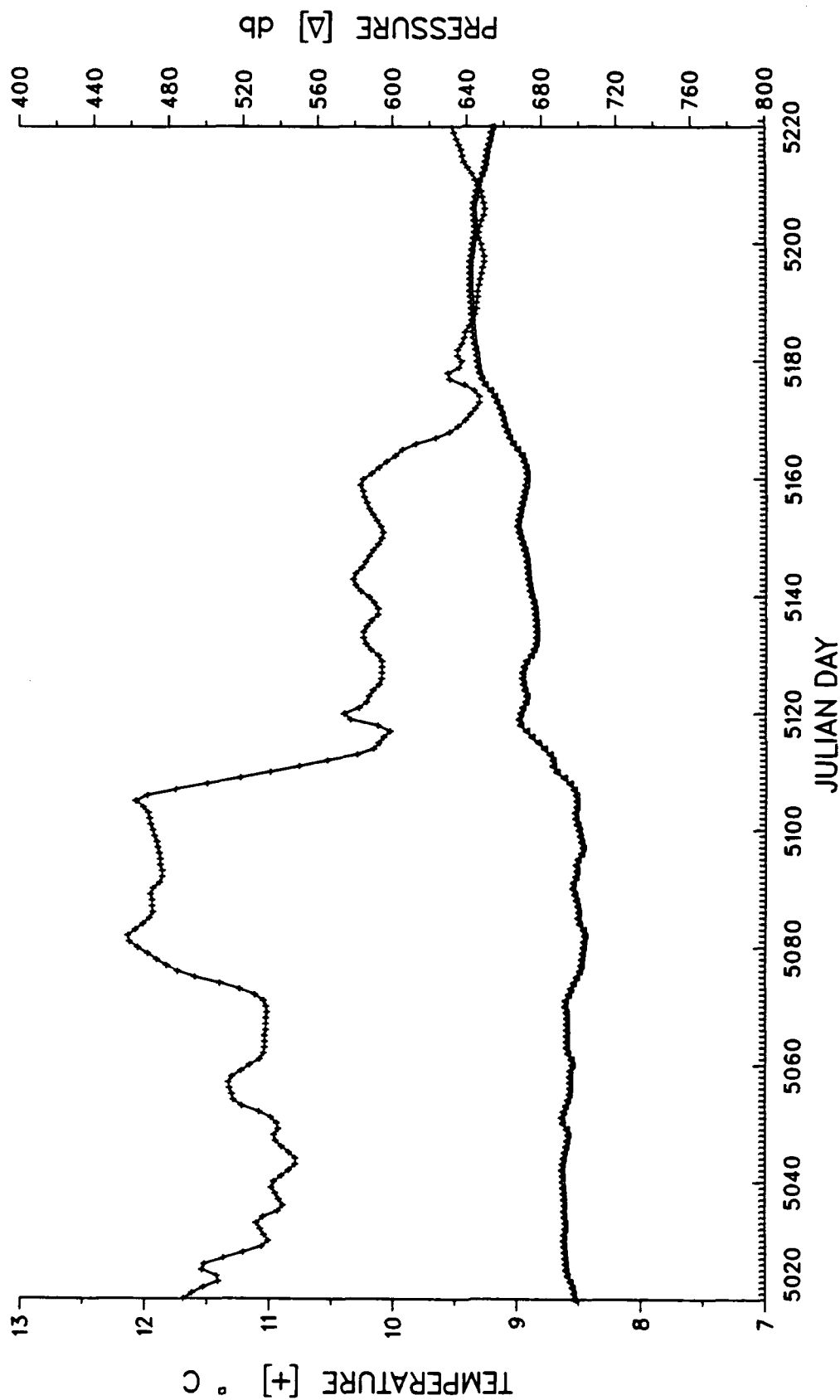


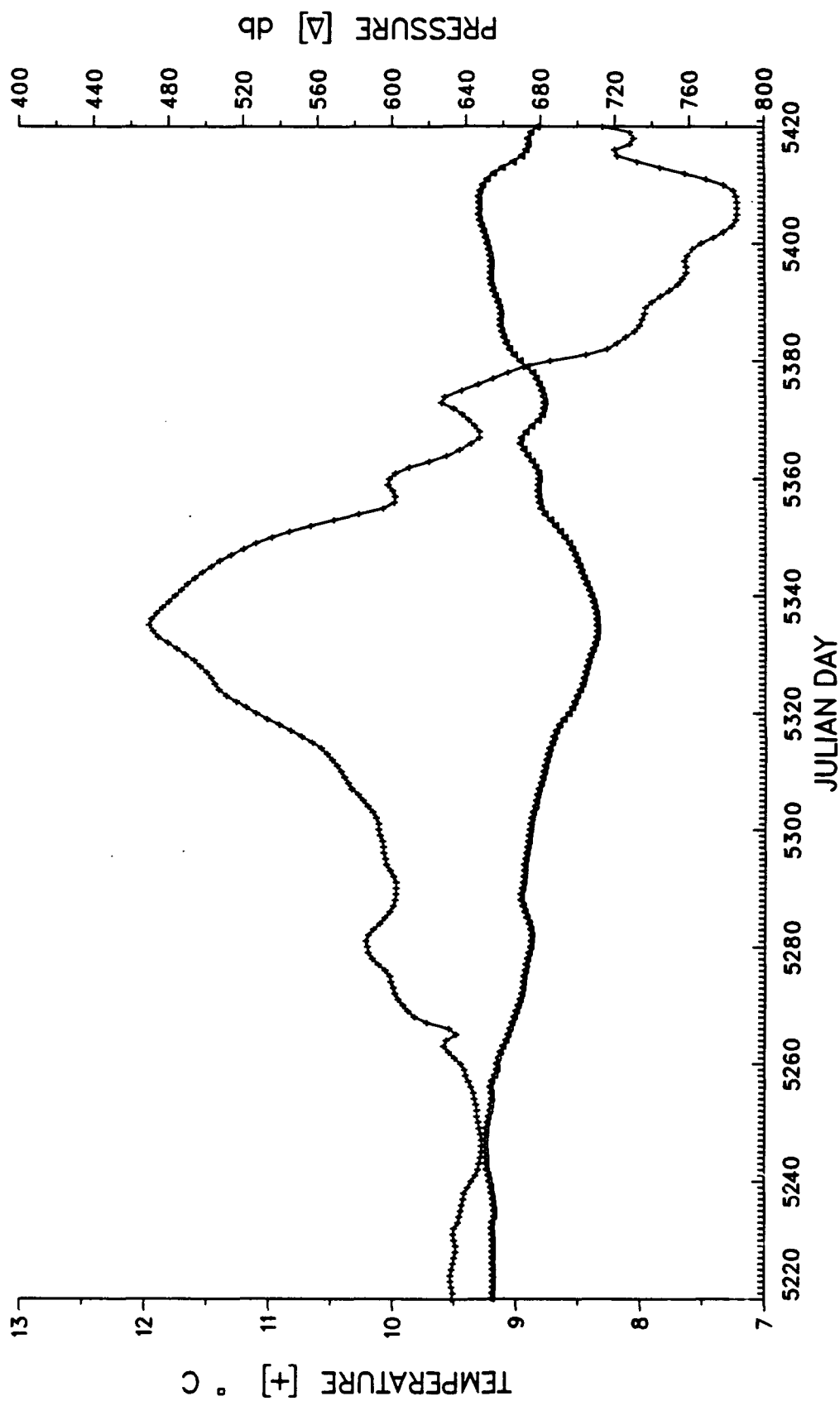




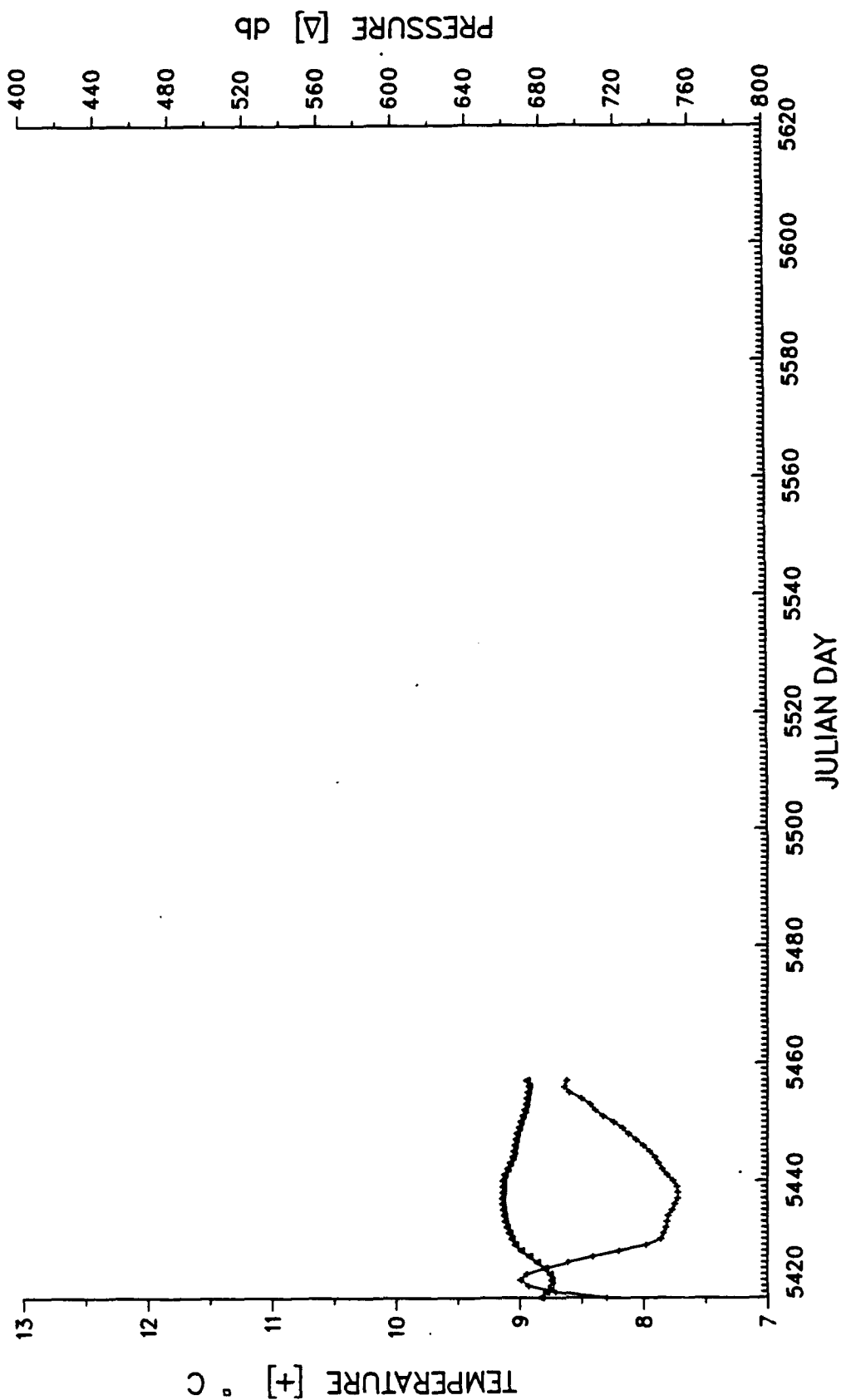


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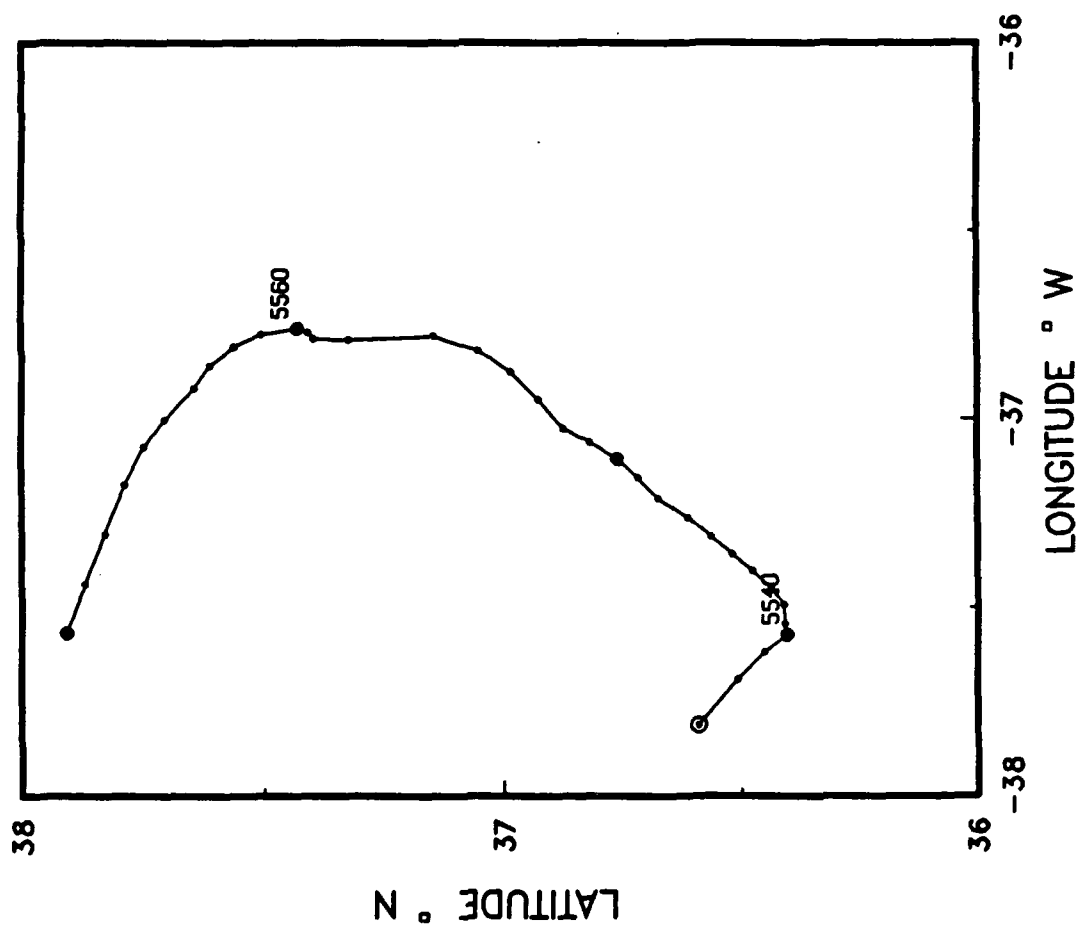




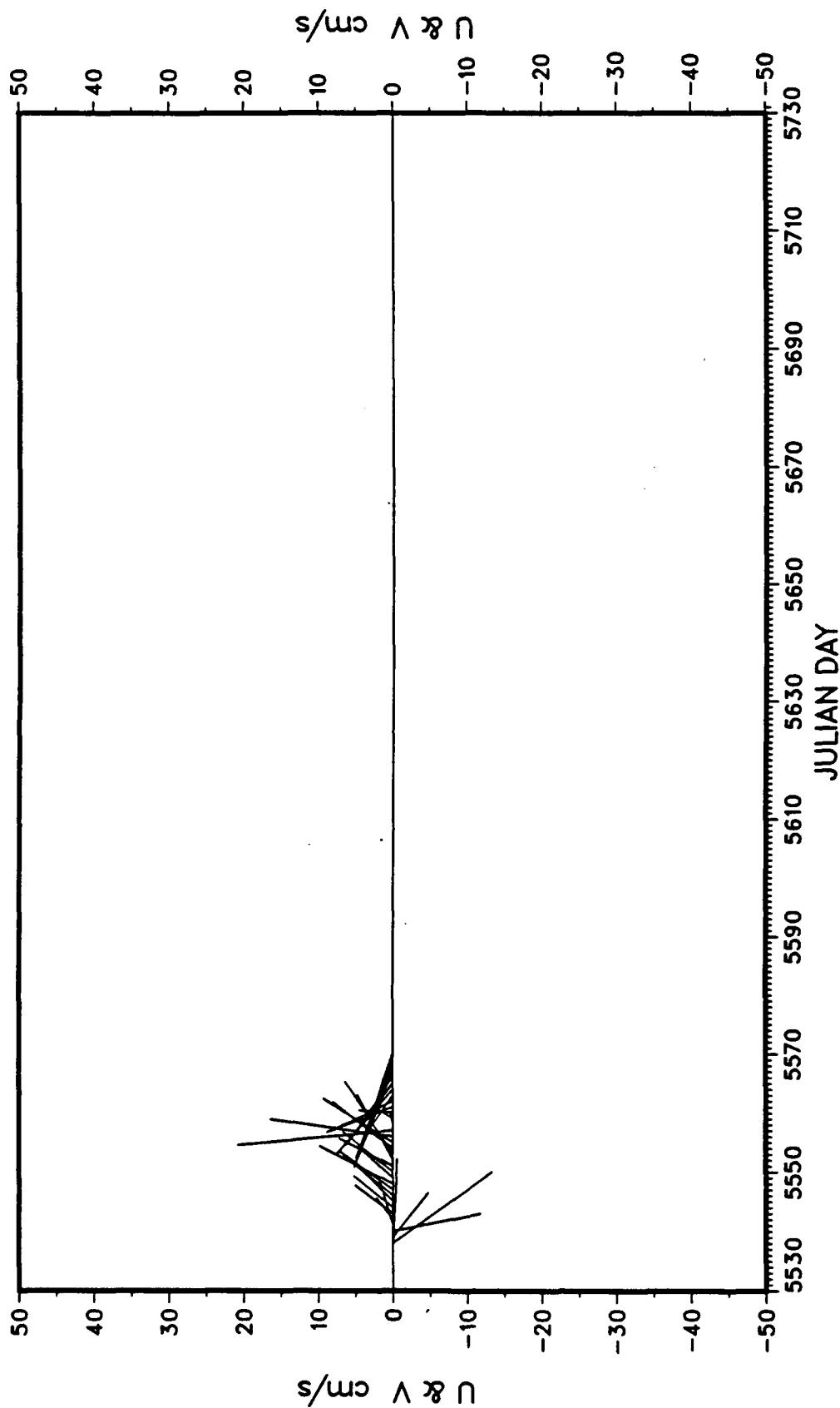
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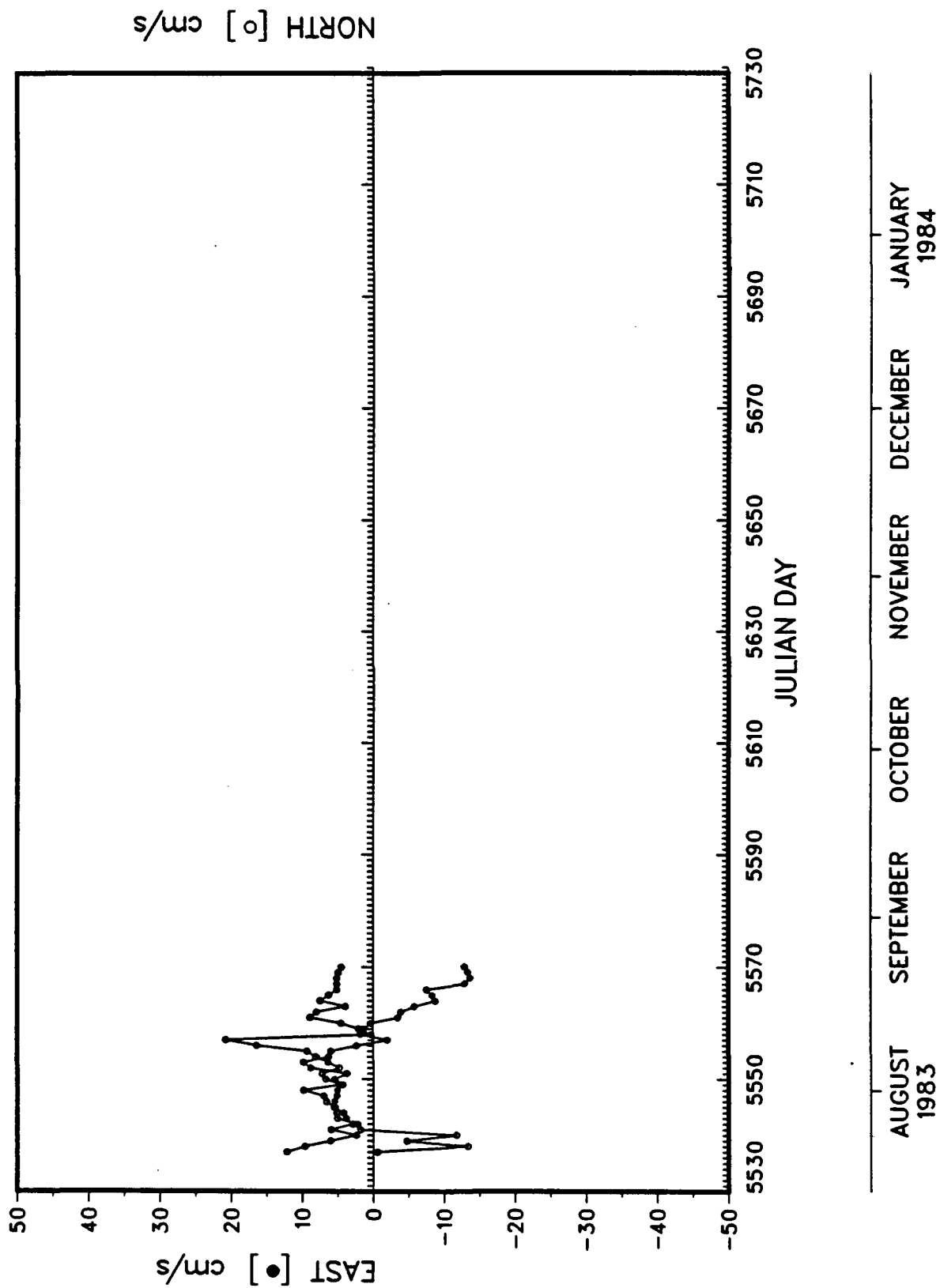
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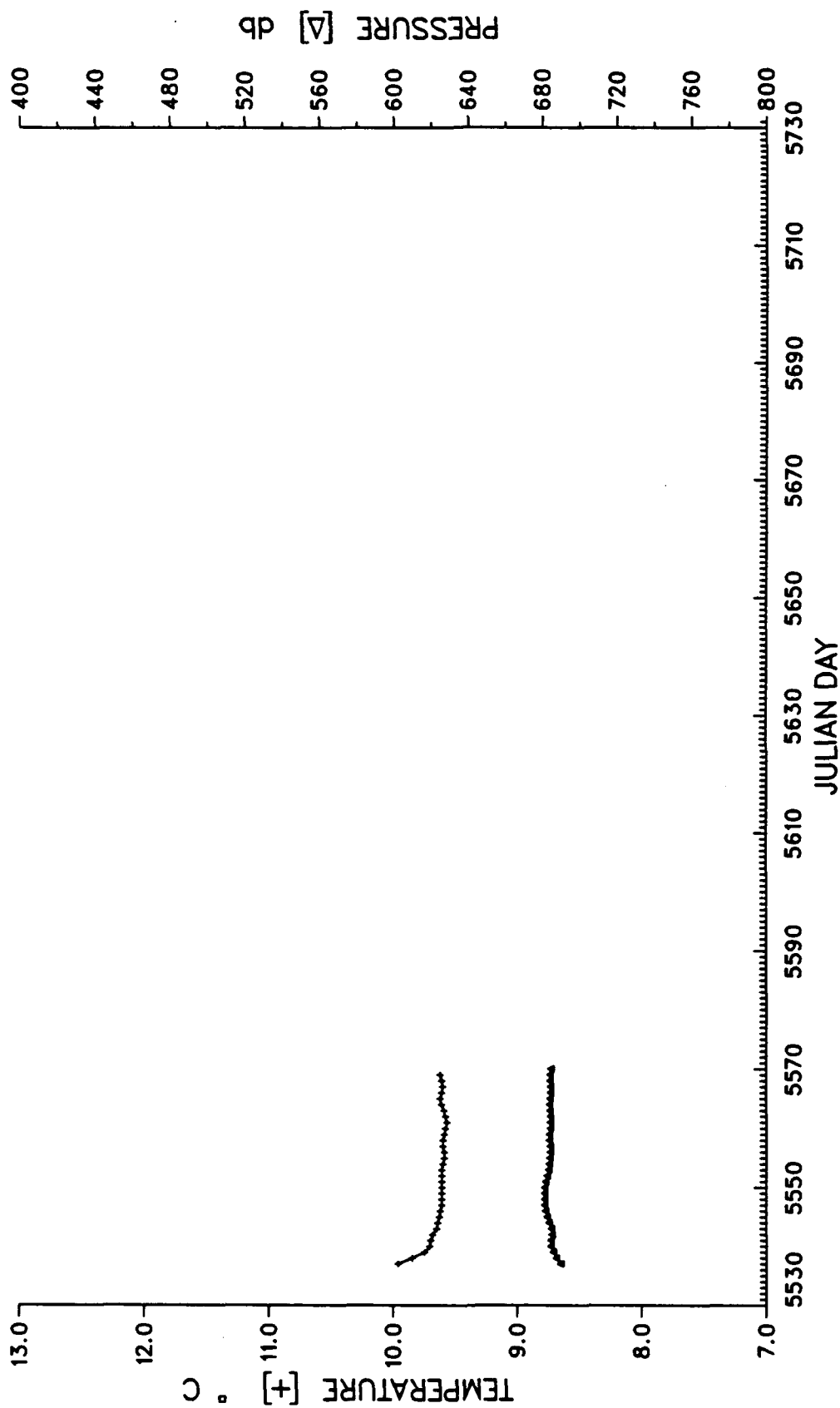
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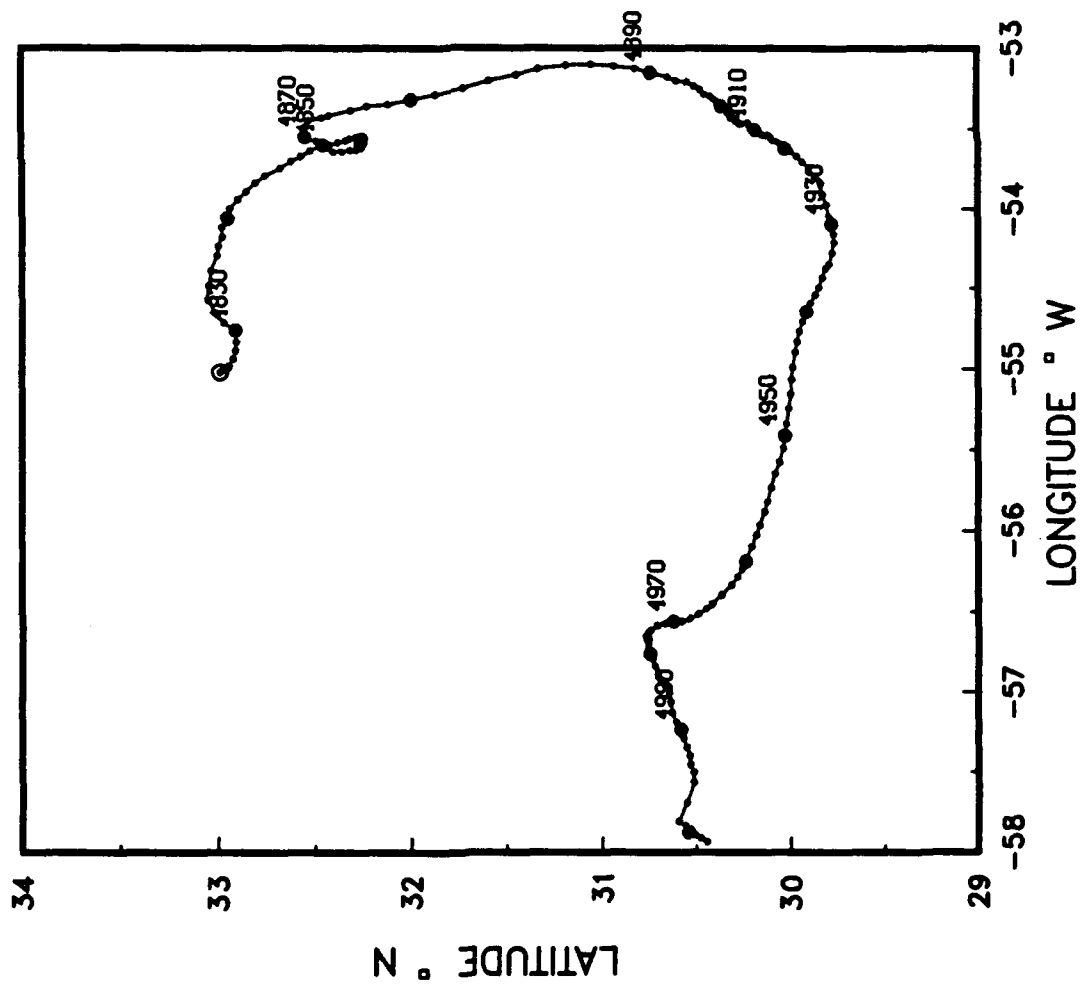
AUGUST 1983
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY 1984



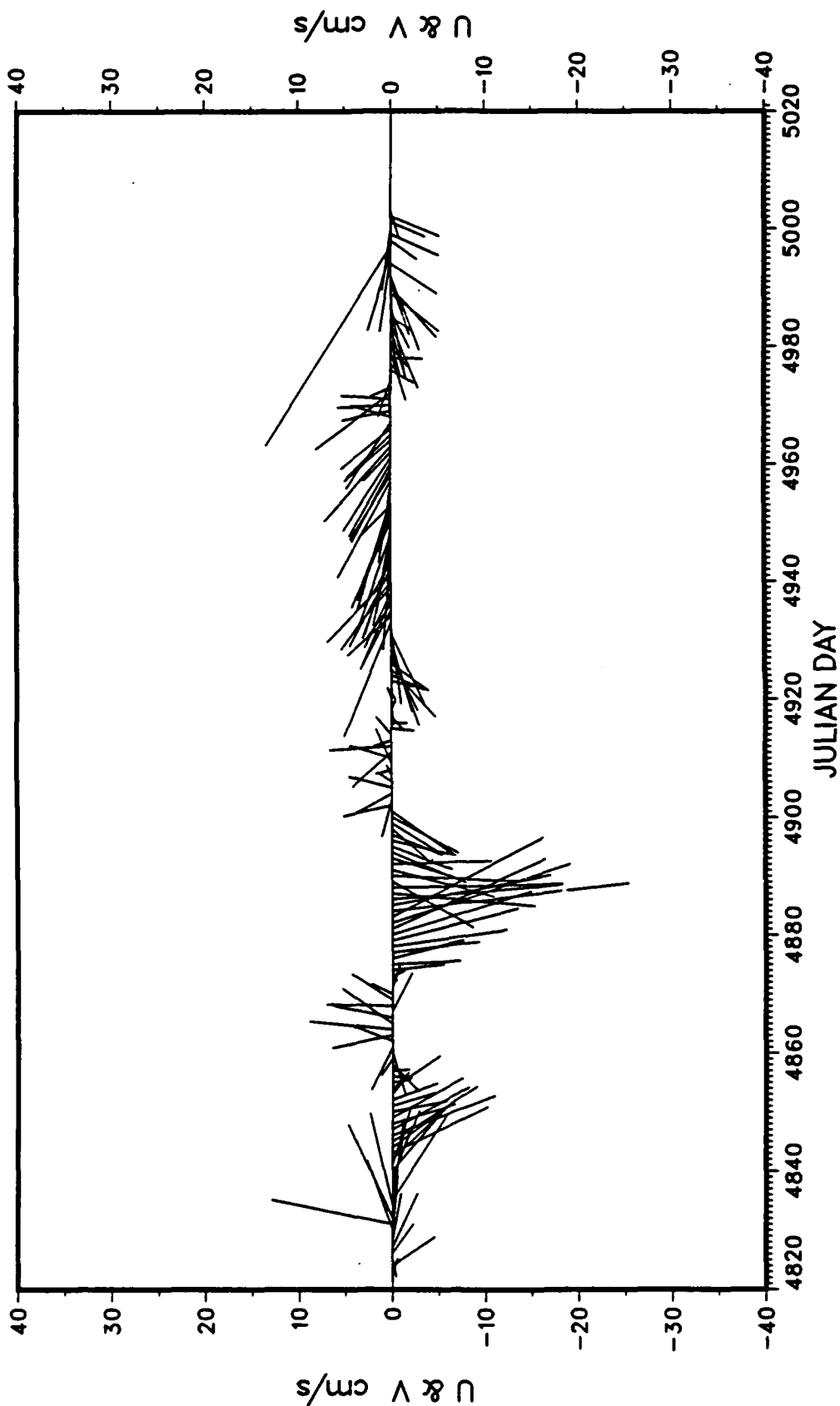
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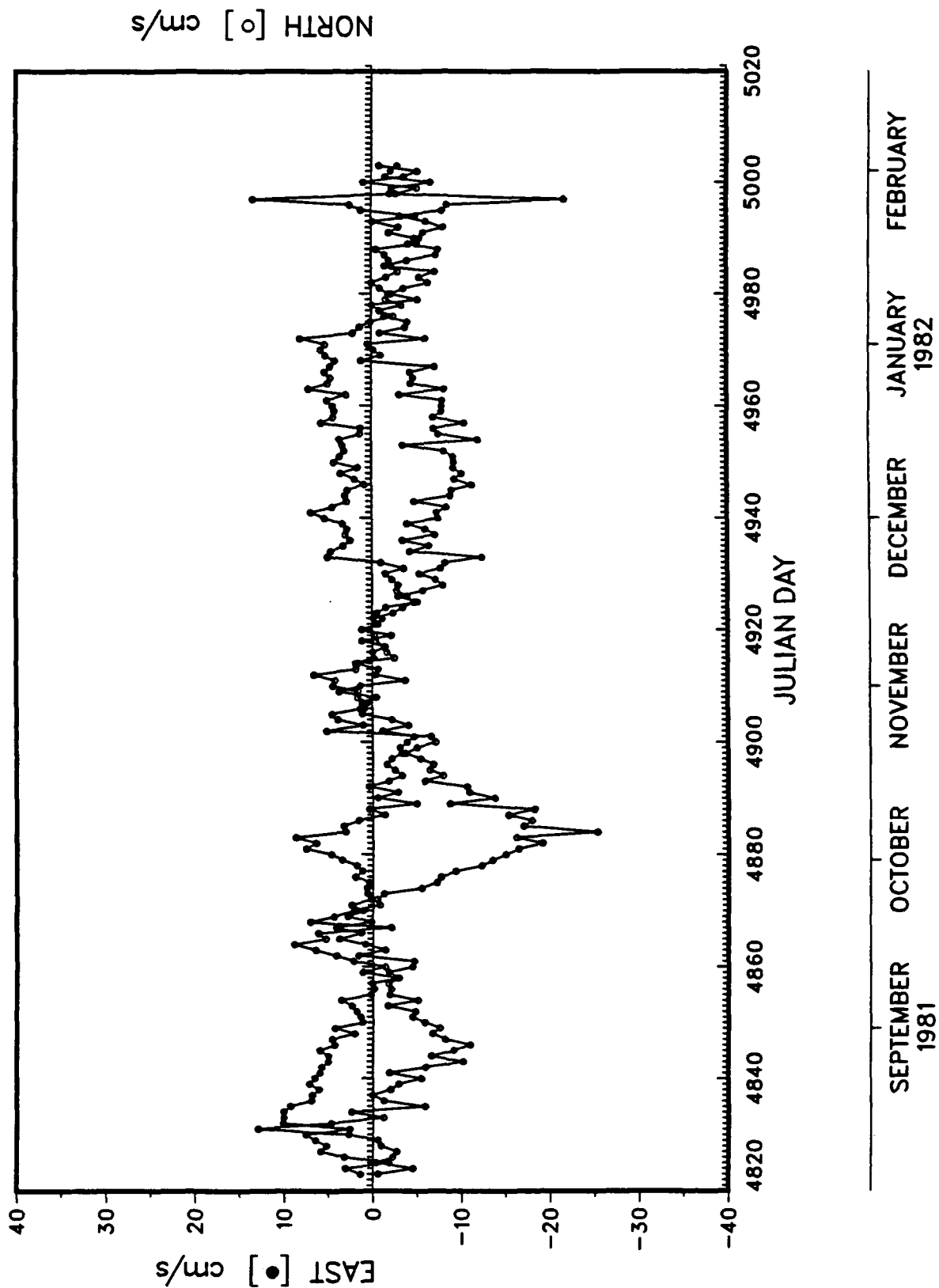
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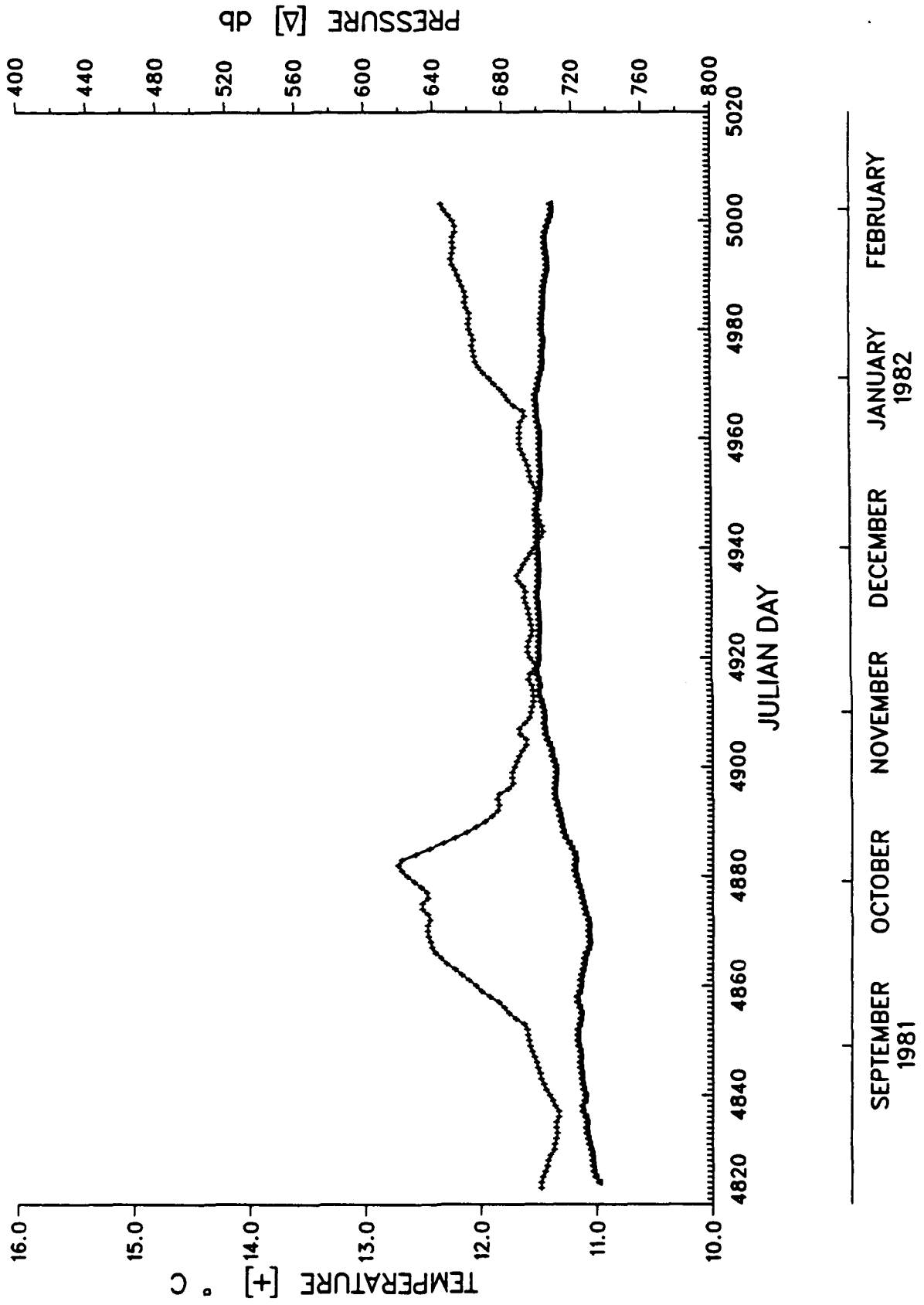
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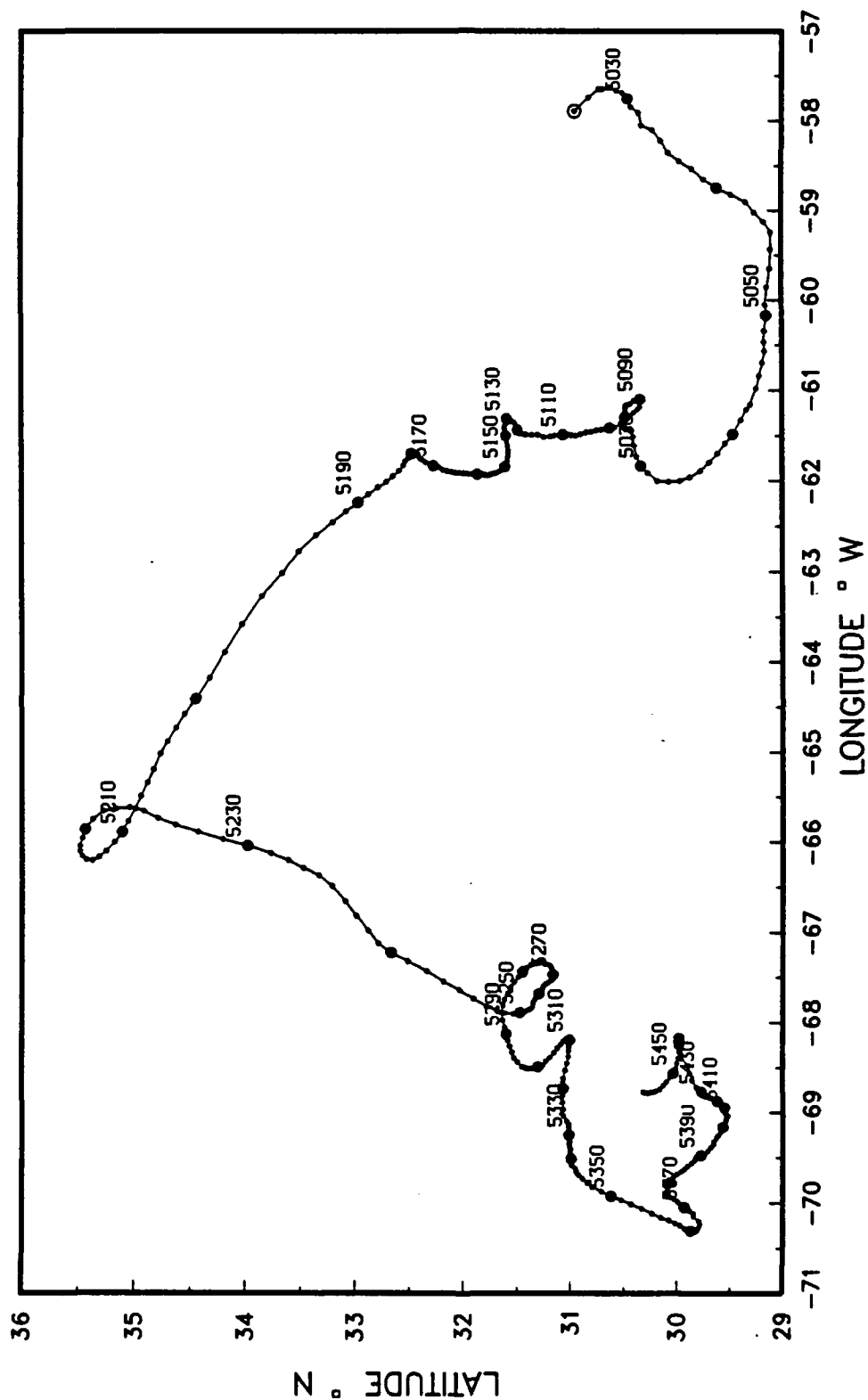


SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

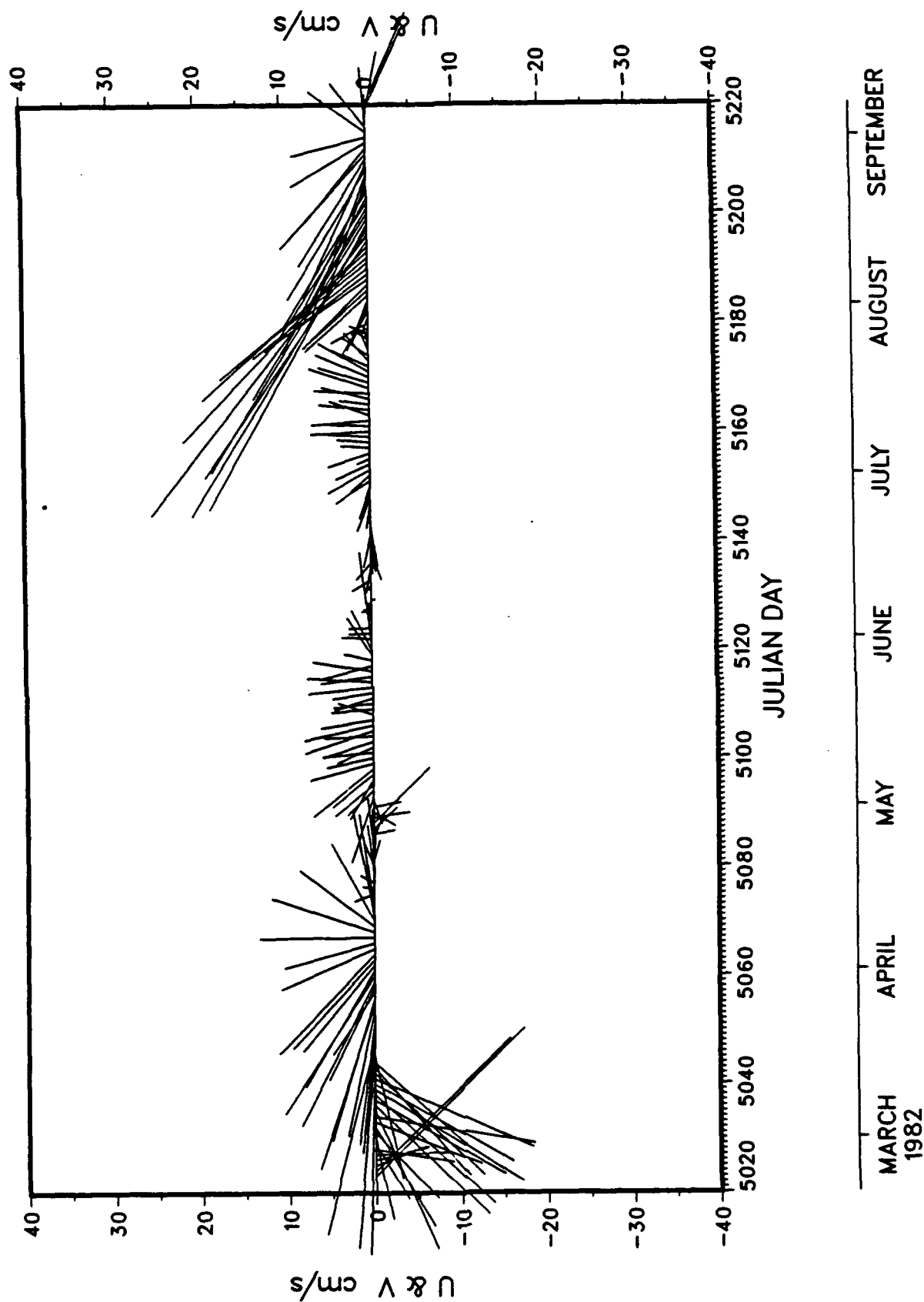


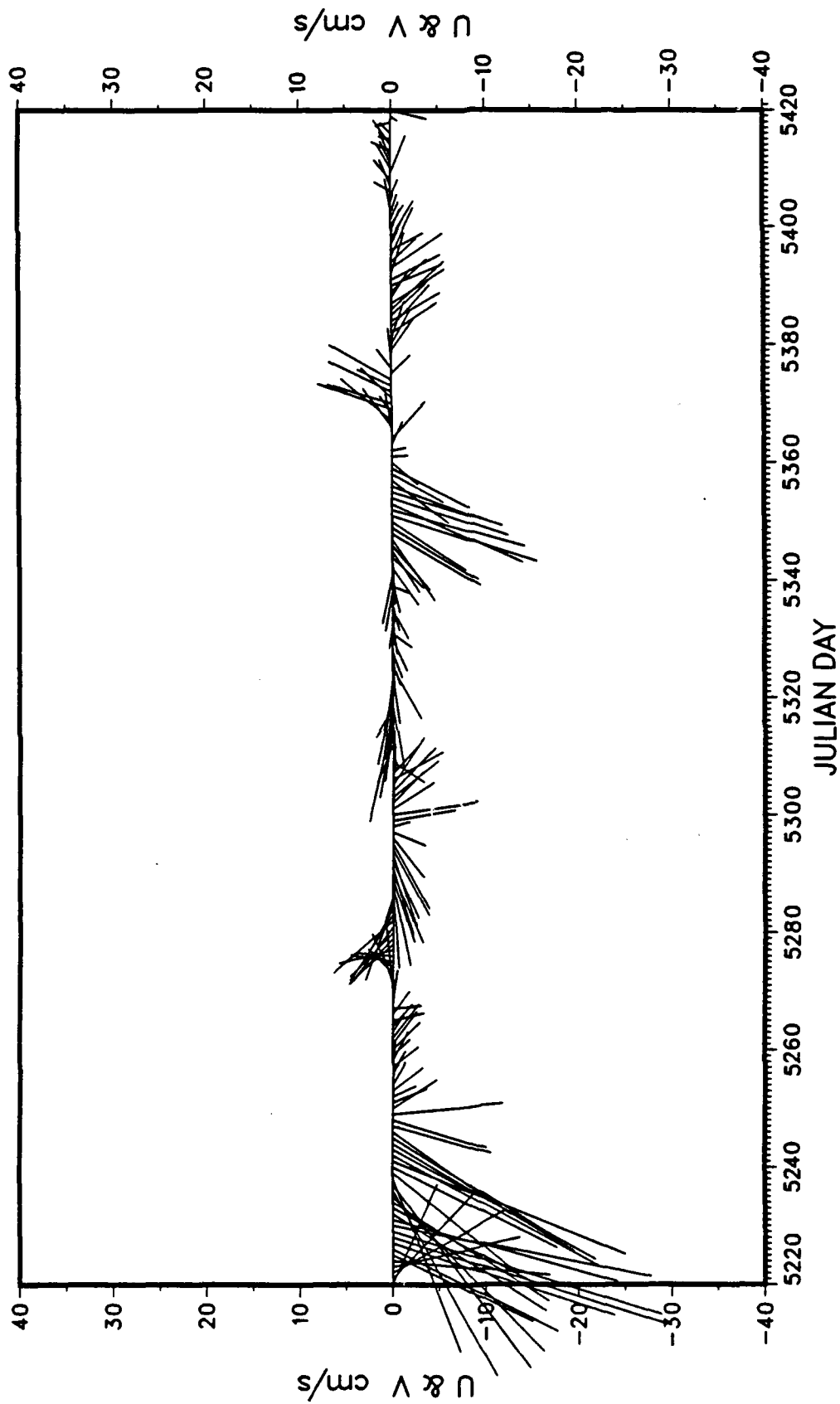
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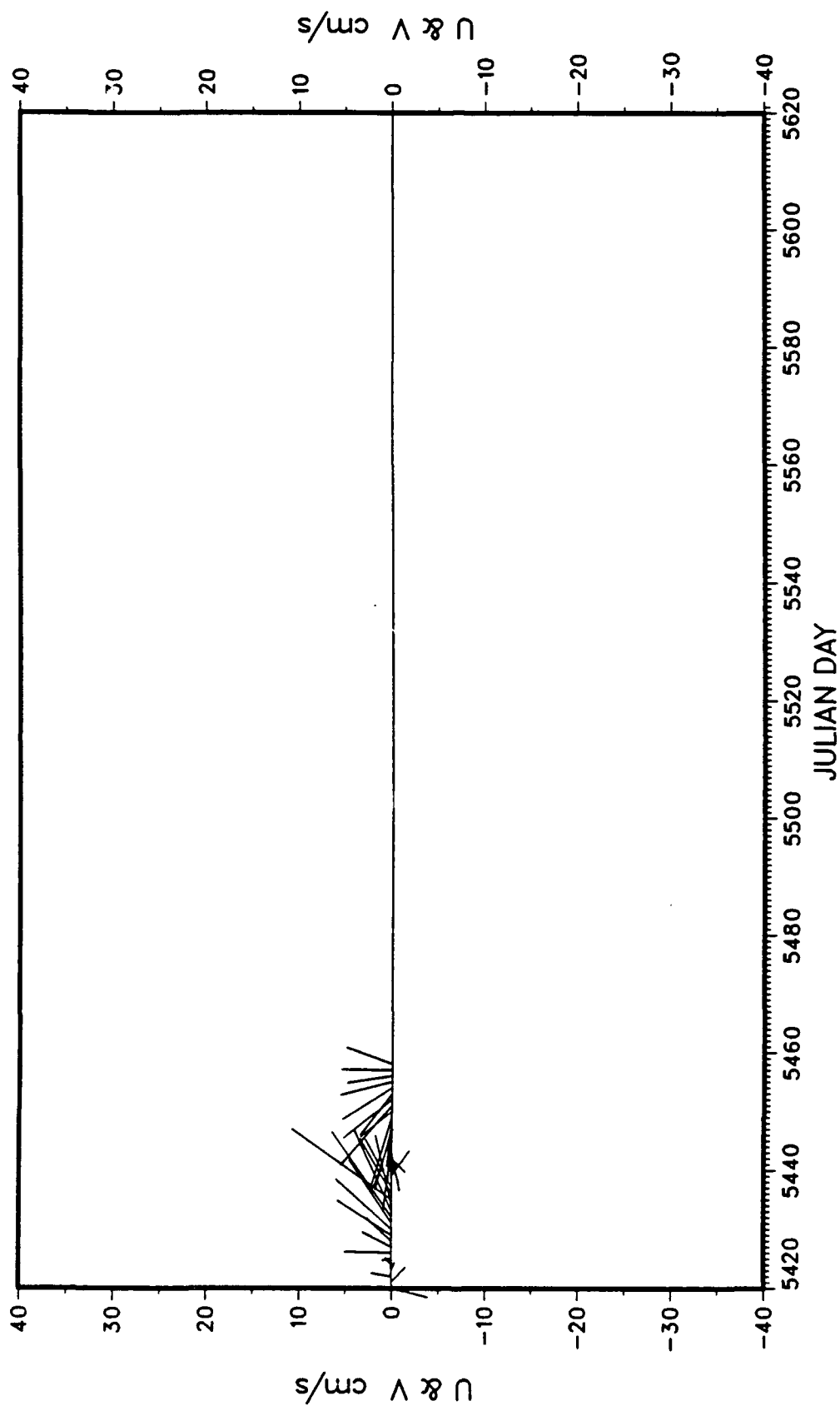
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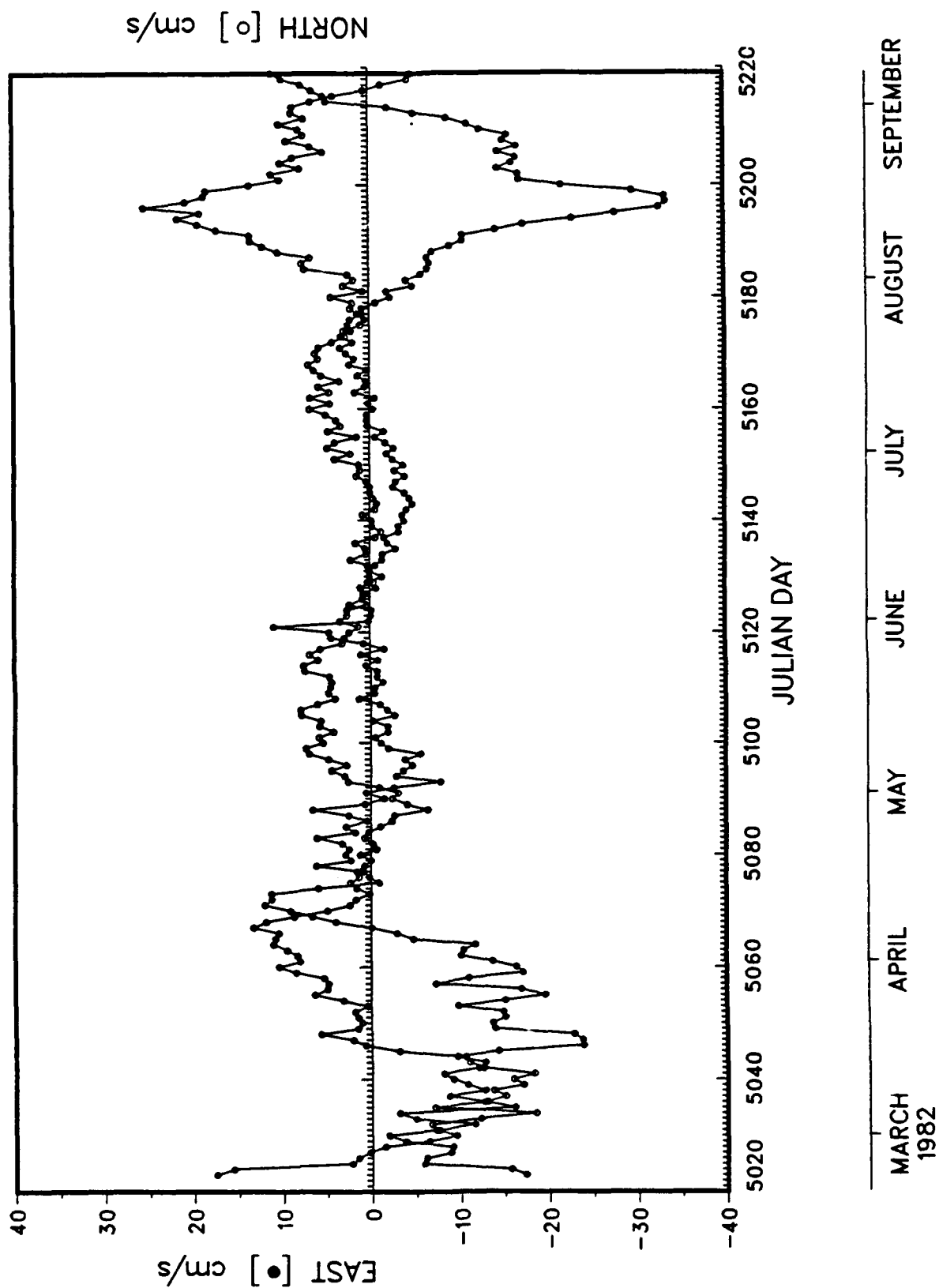


OCTOBER 1982 NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

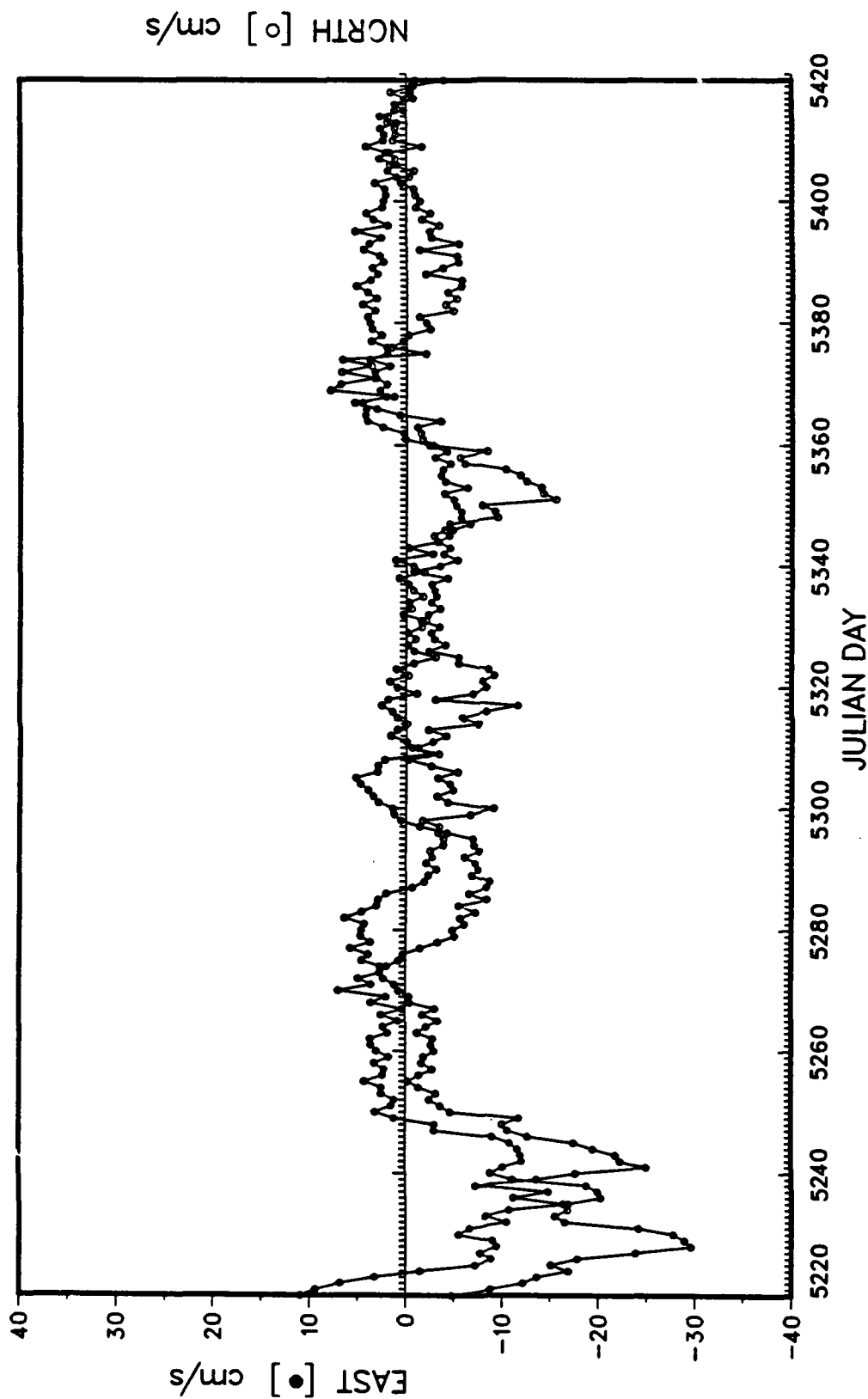
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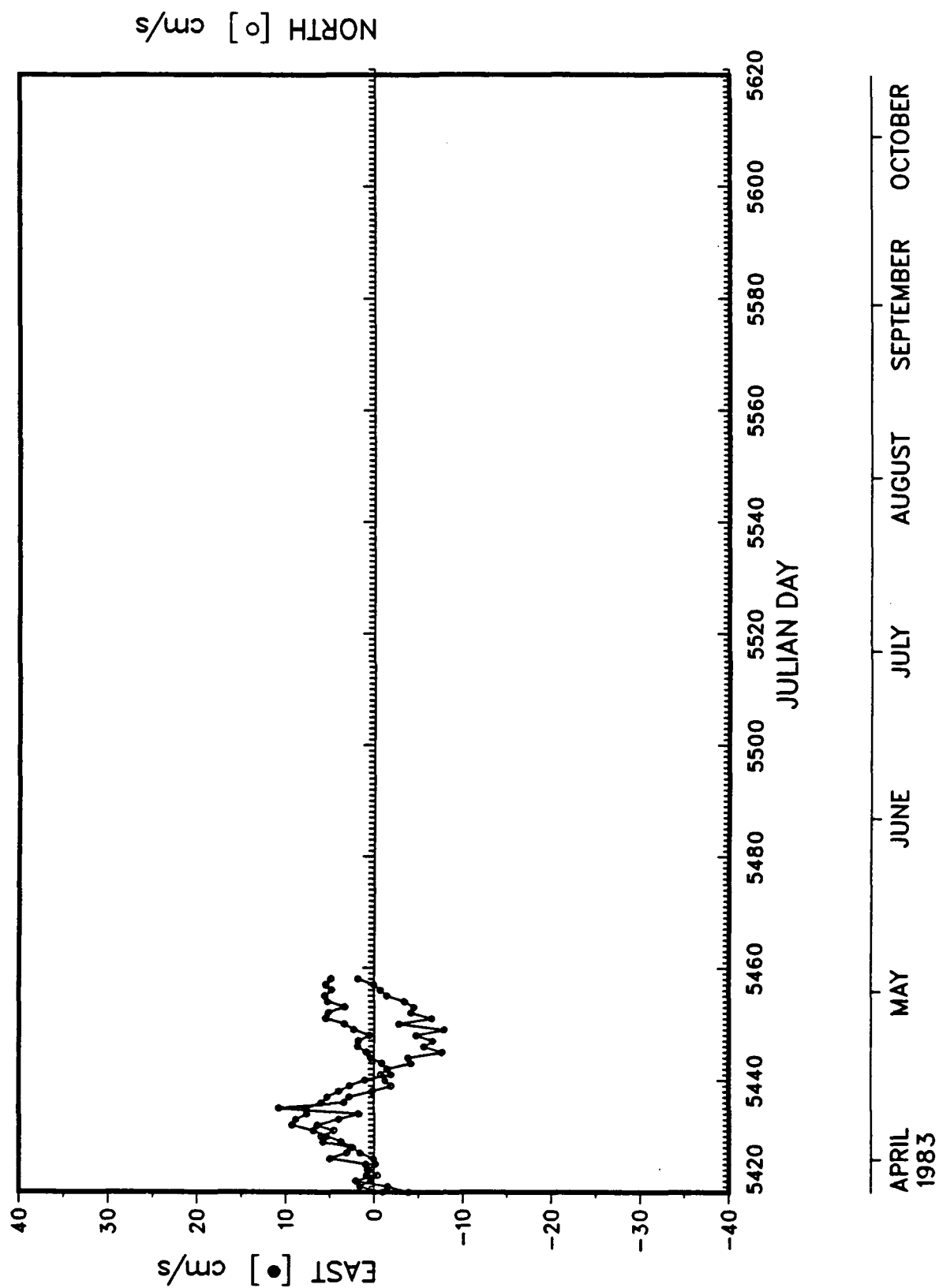
APRIL 1983 MAY JUNE JULY AUGUST SEPTEMBER OCTOBER



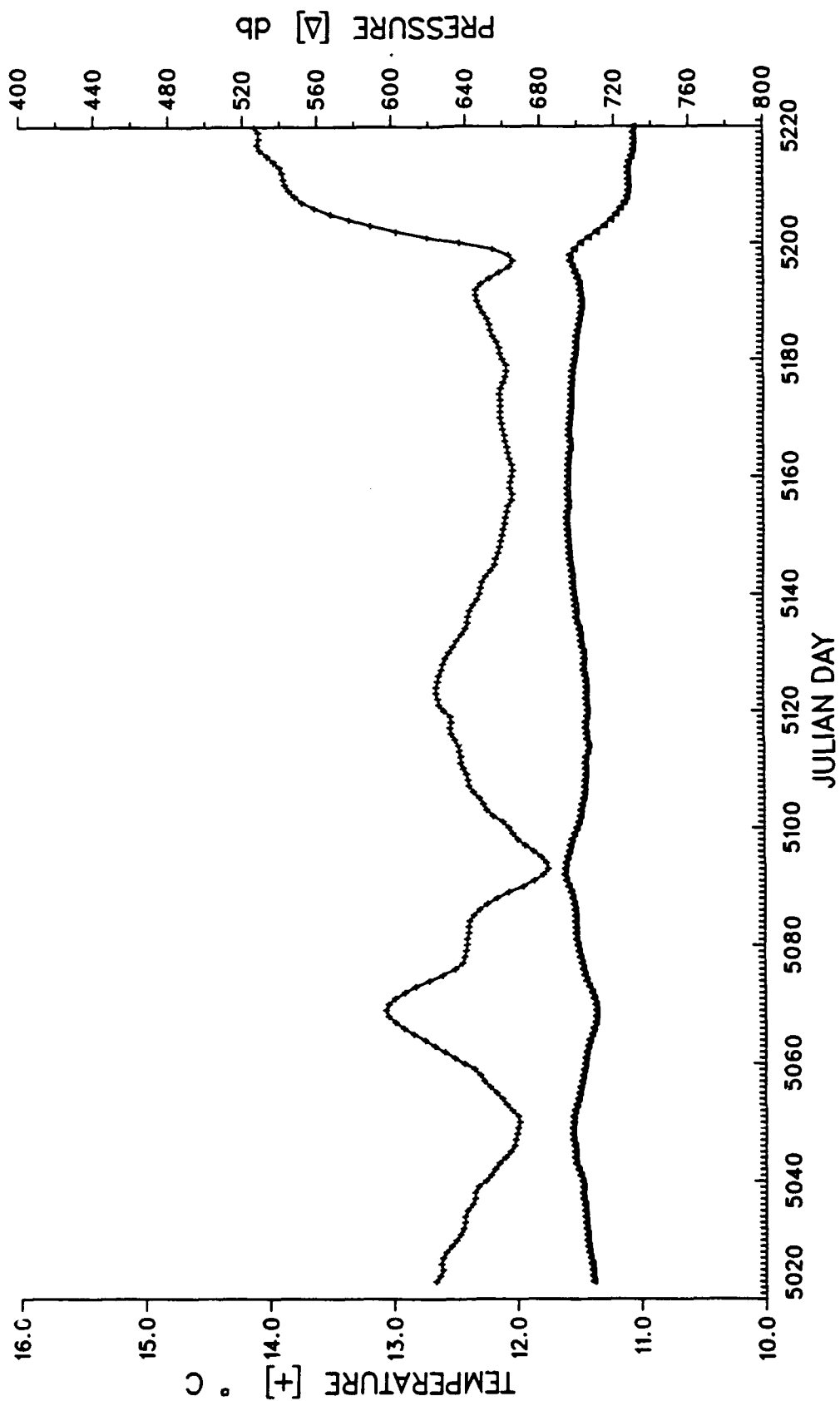
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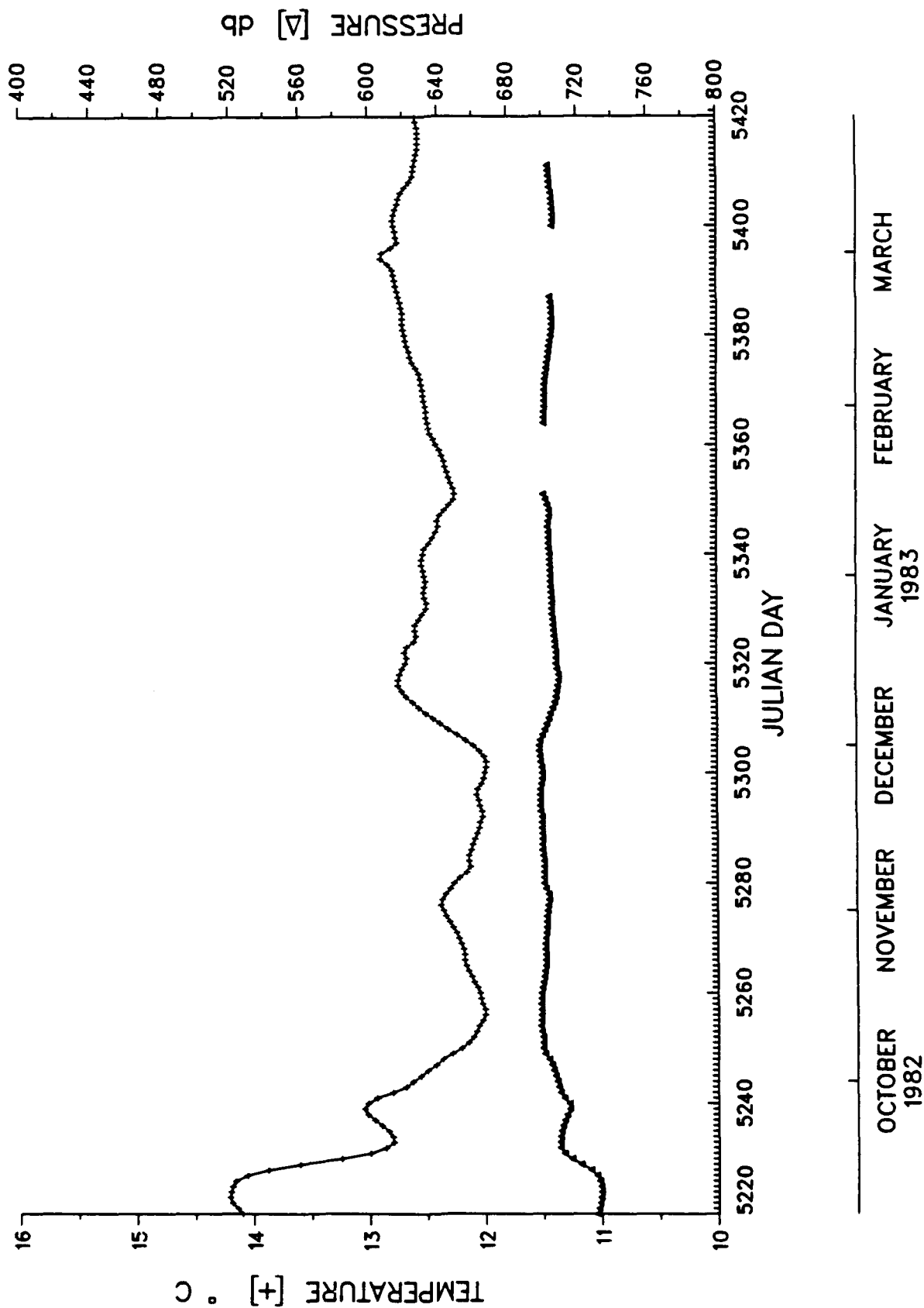


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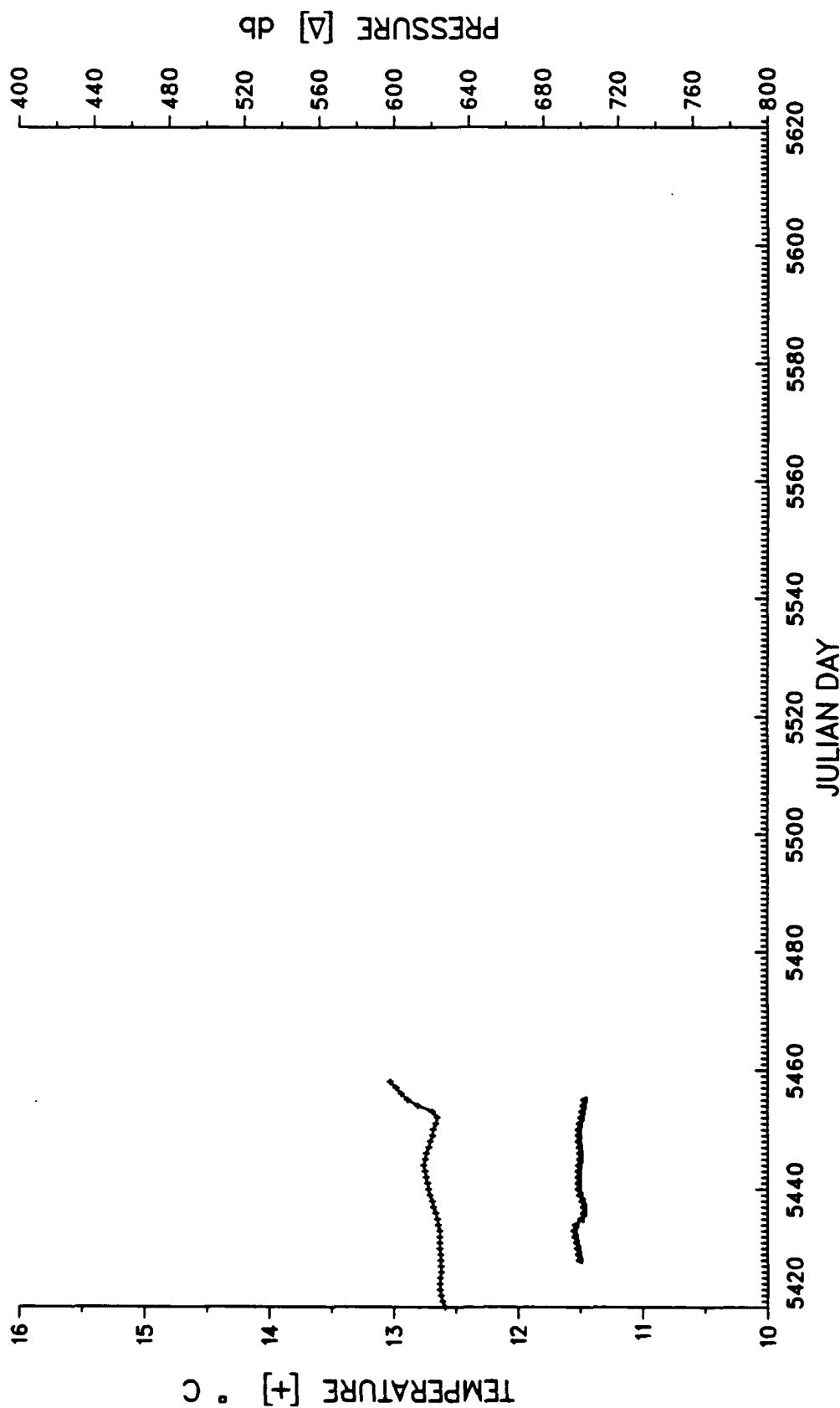


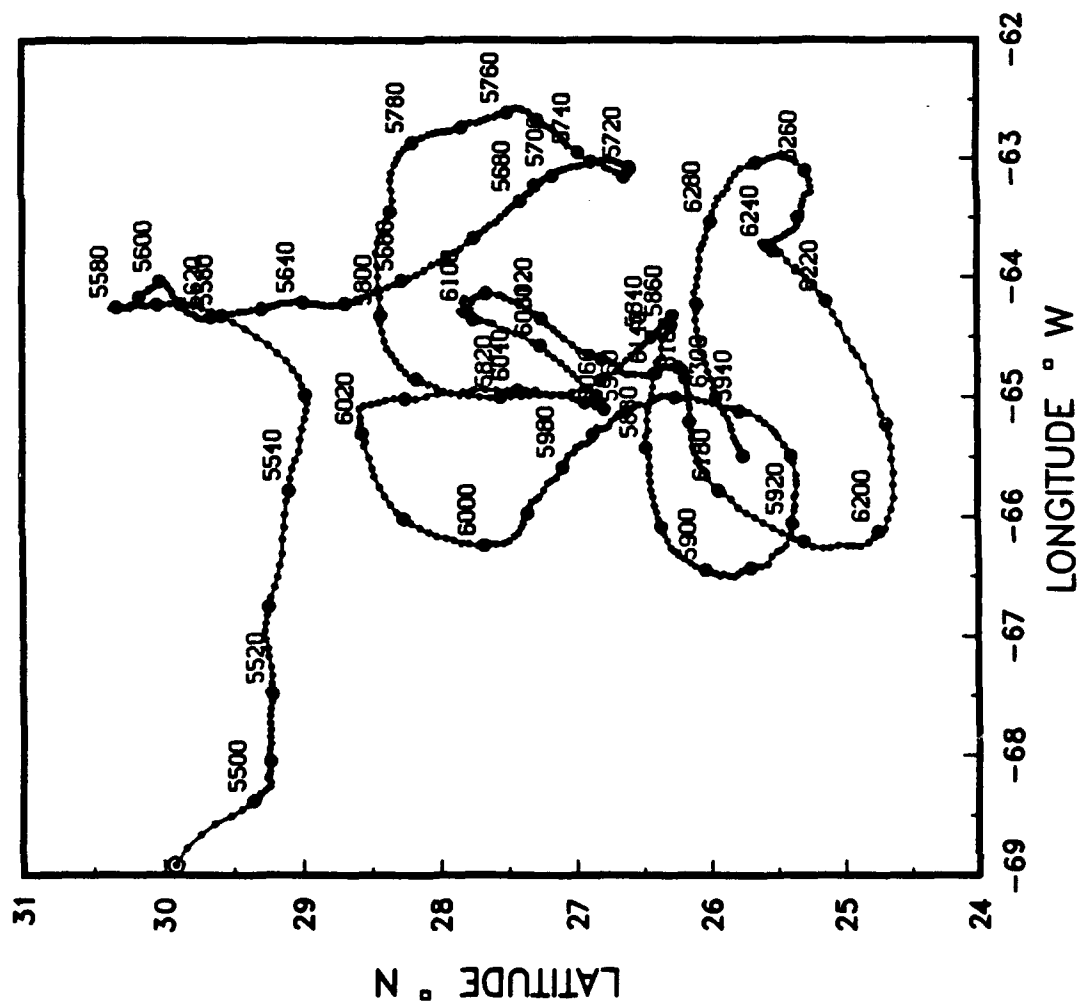
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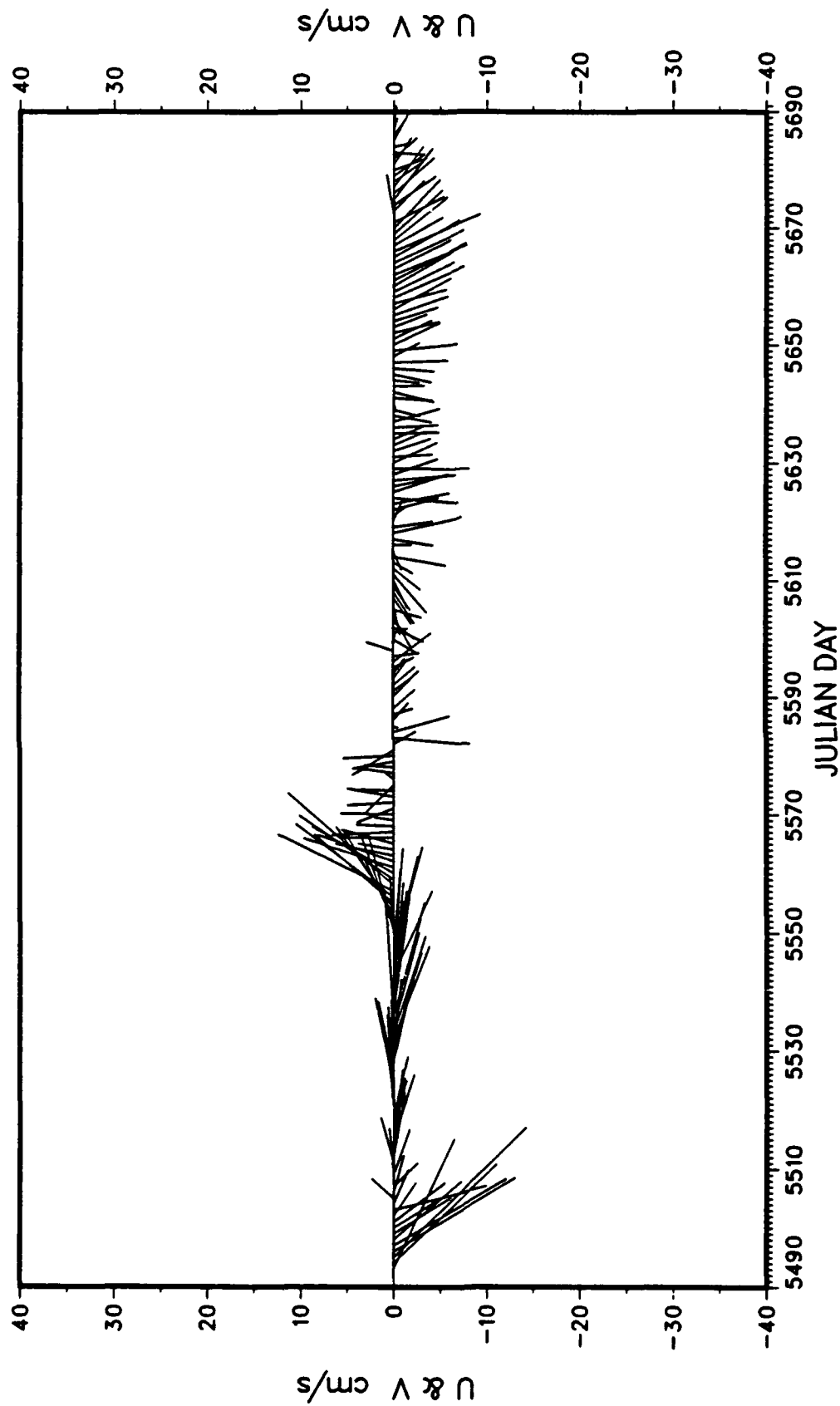


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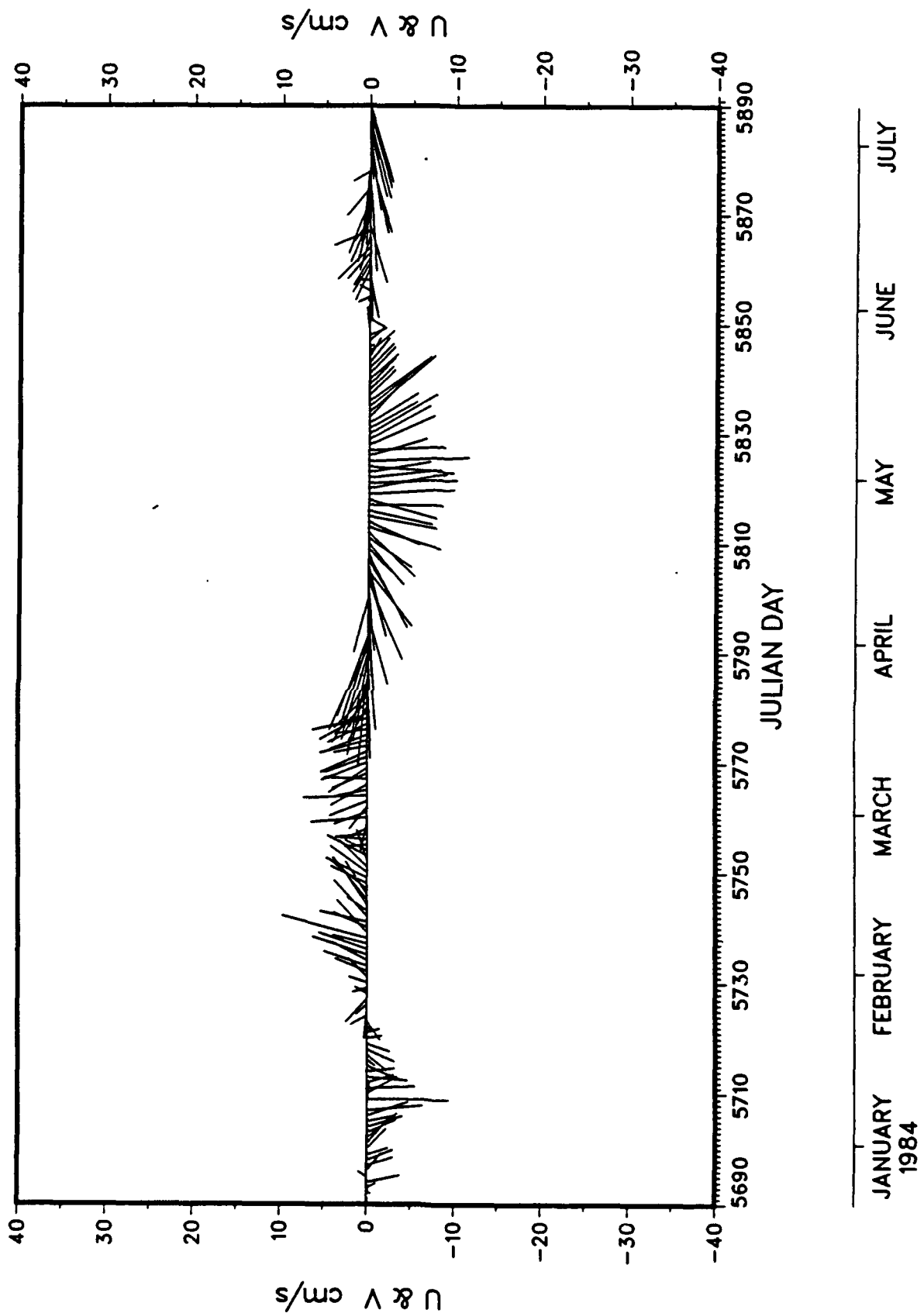




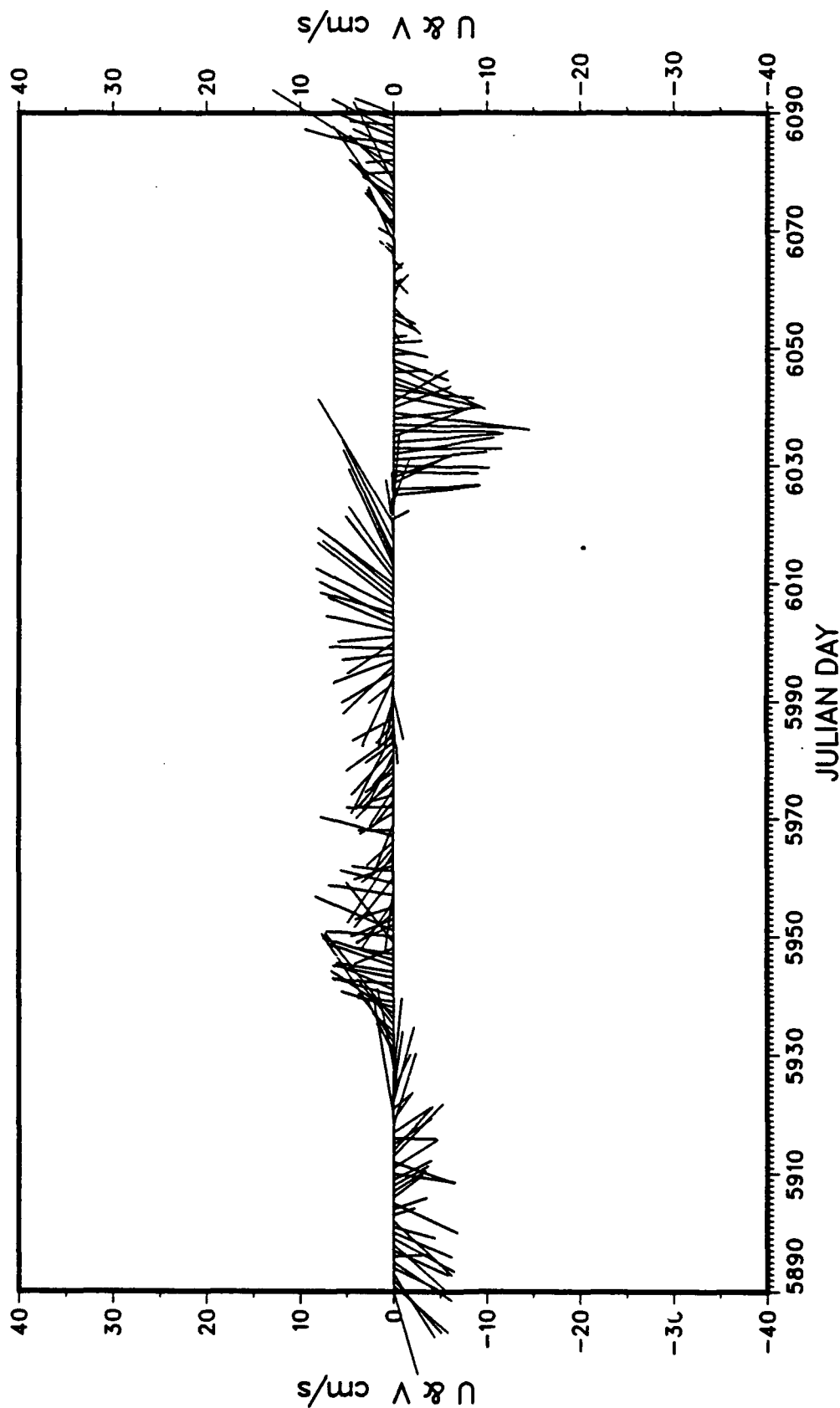
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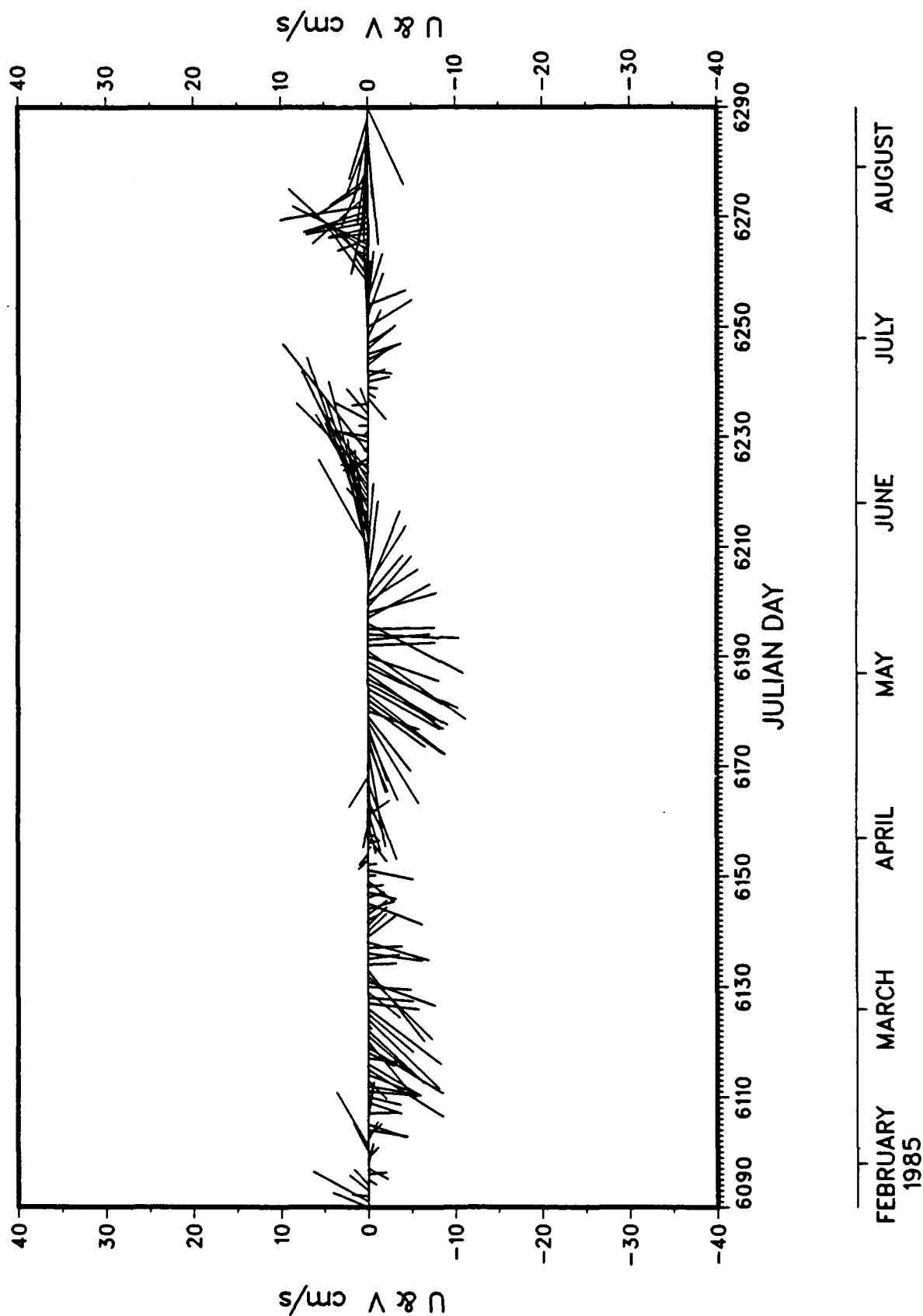
JULY 1983 AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER



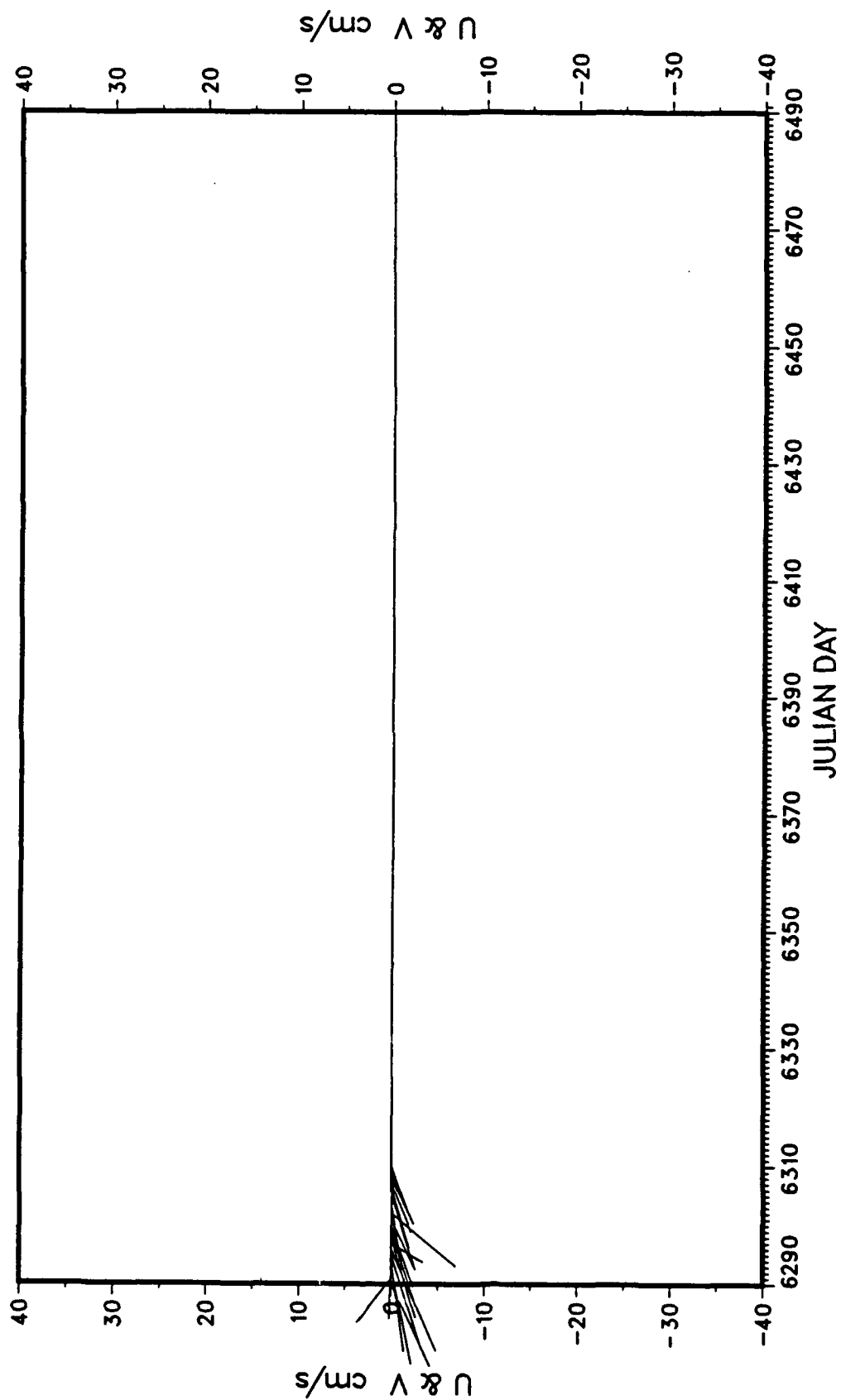
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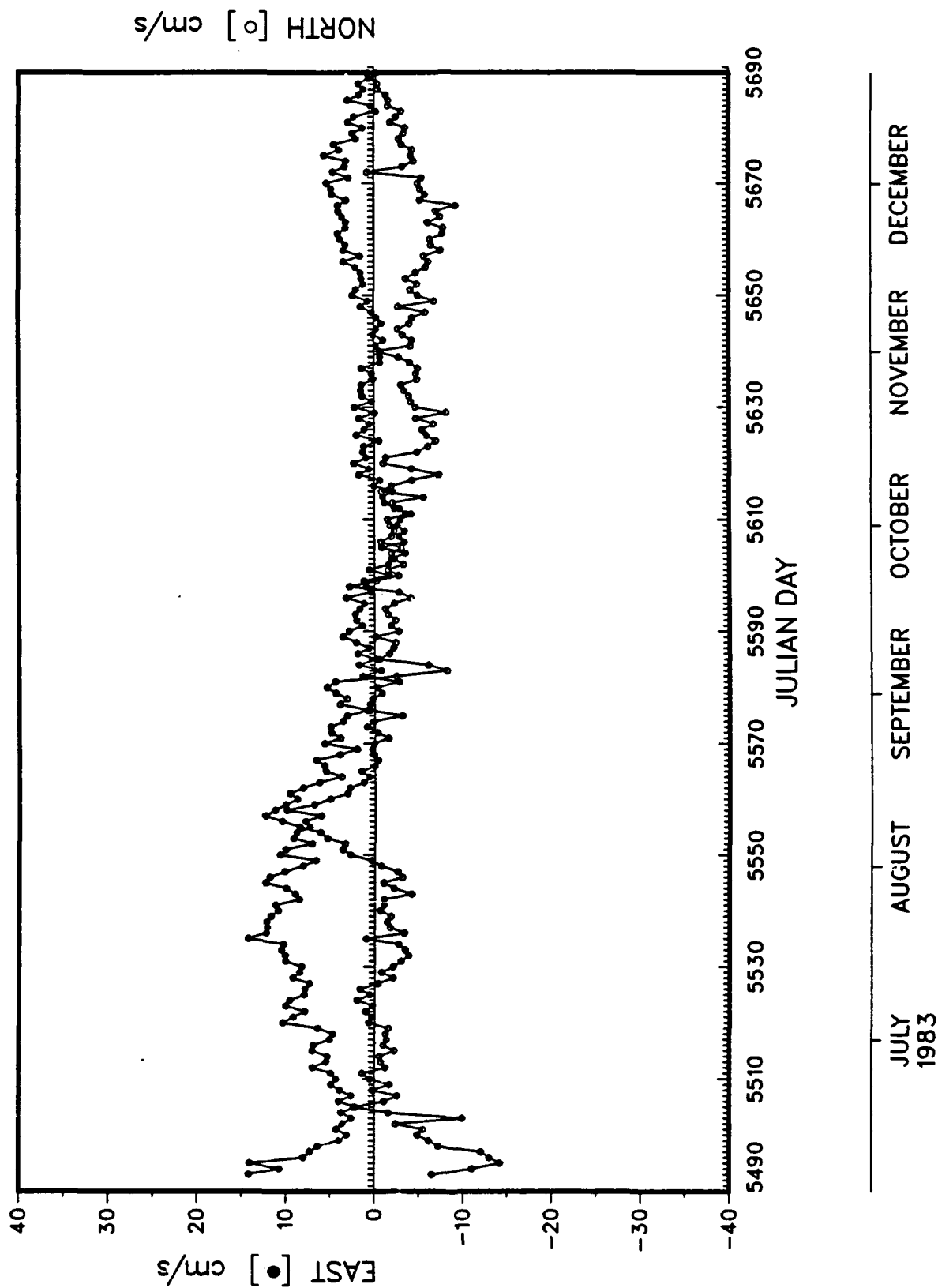
AUGUST 1984 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1985

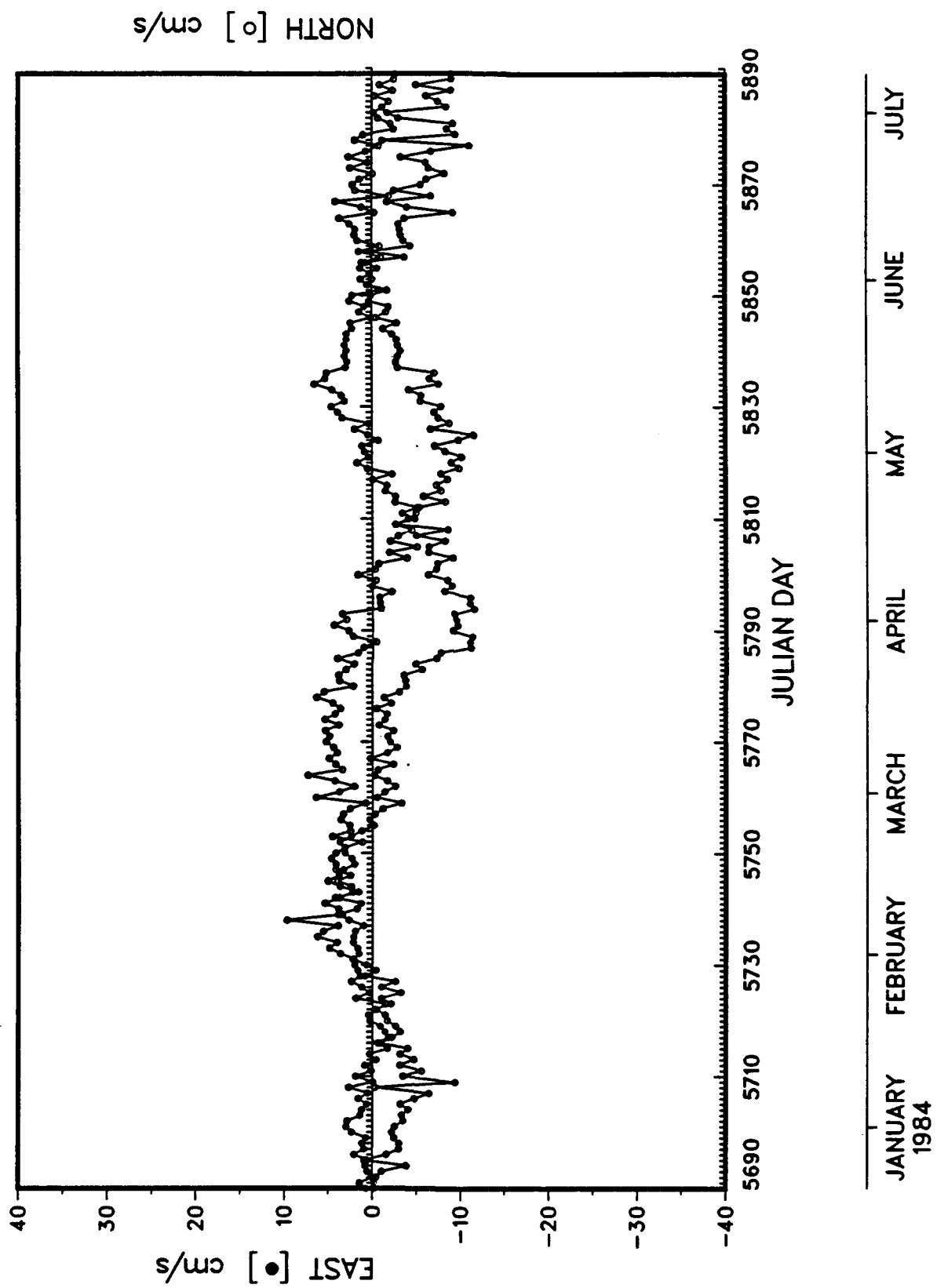


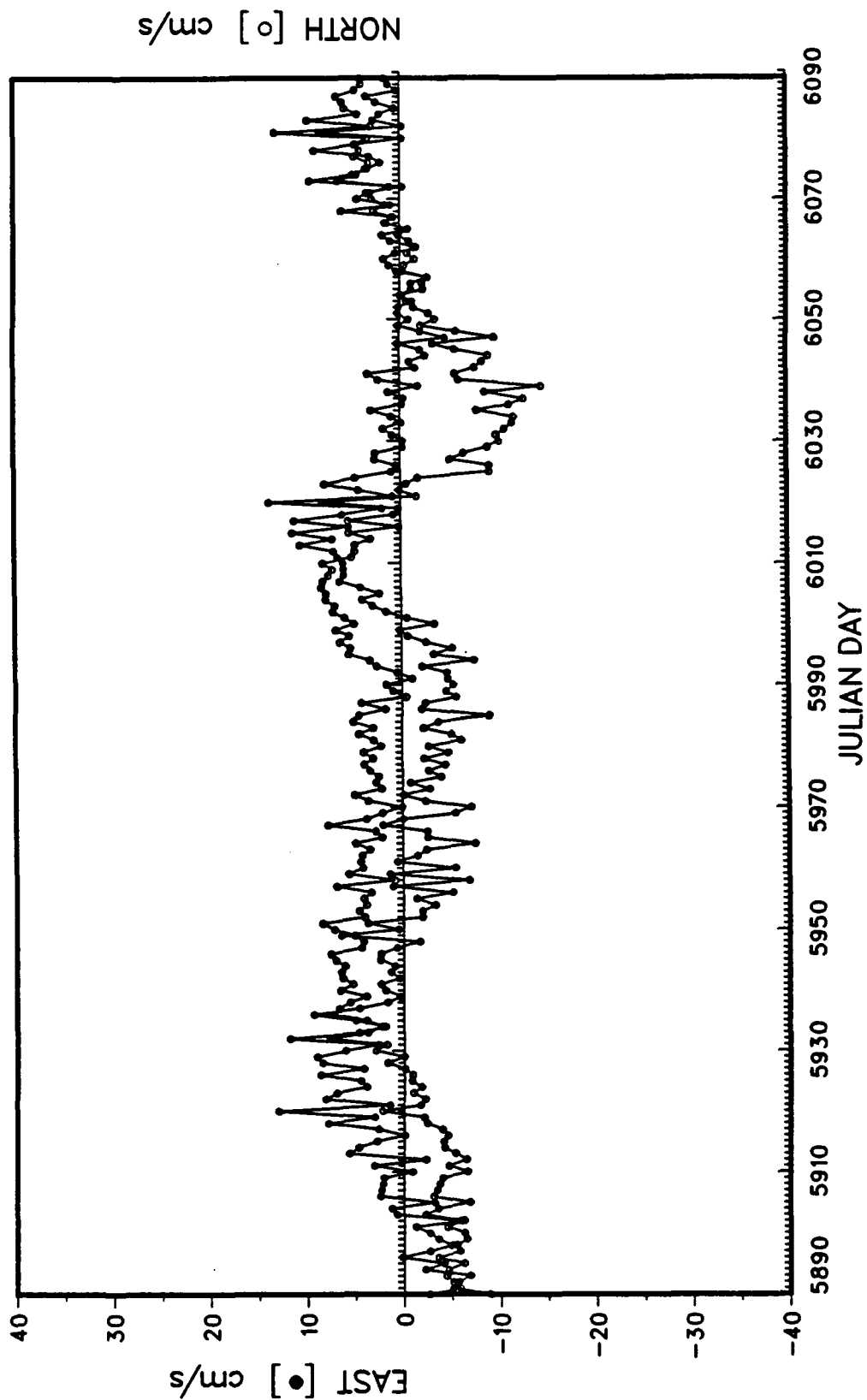
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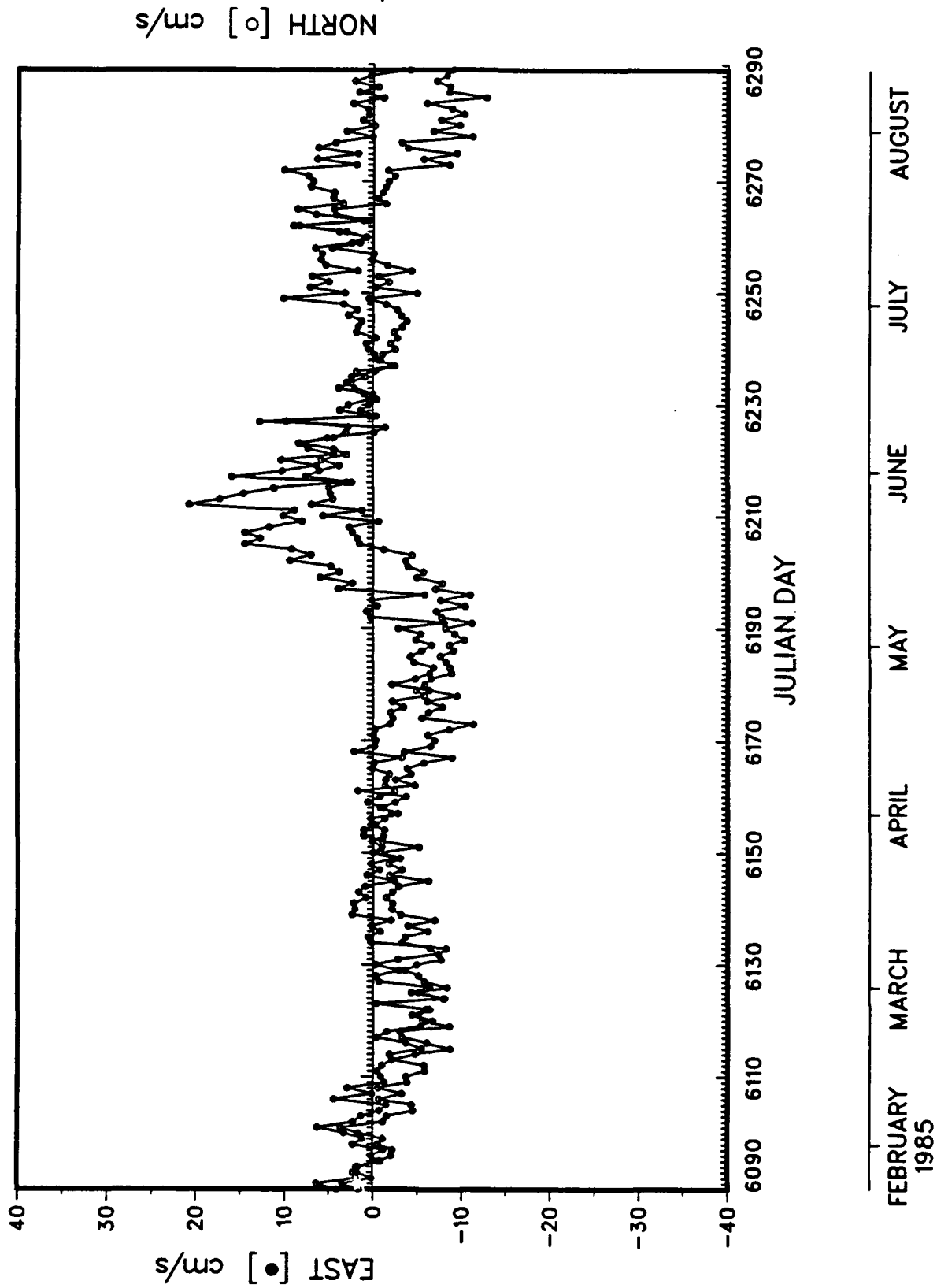
SEPTEMBER 1985 OCTOBER NOVEMBER DECEMBER JANUARY 1986 FEBRUARY

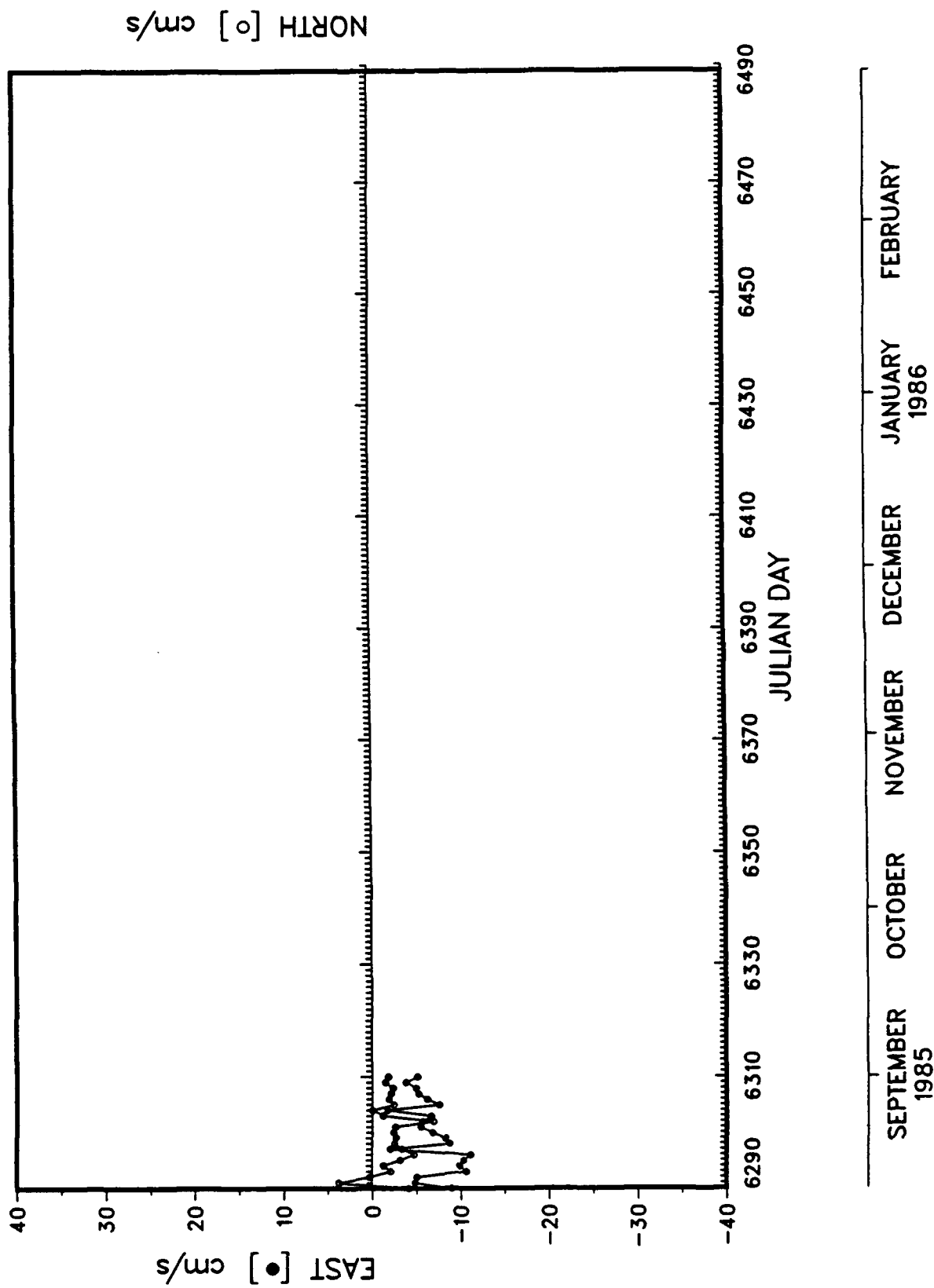


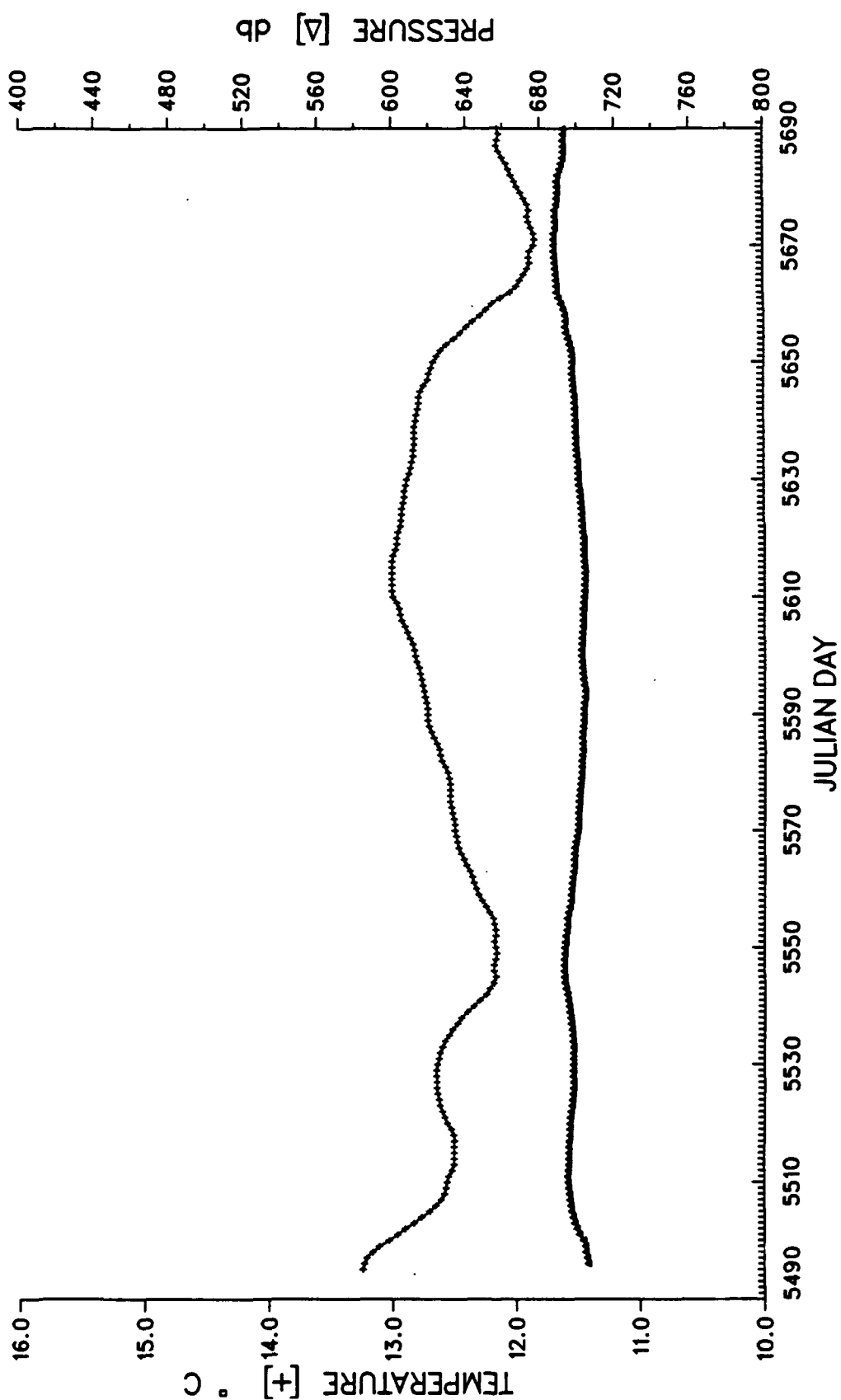


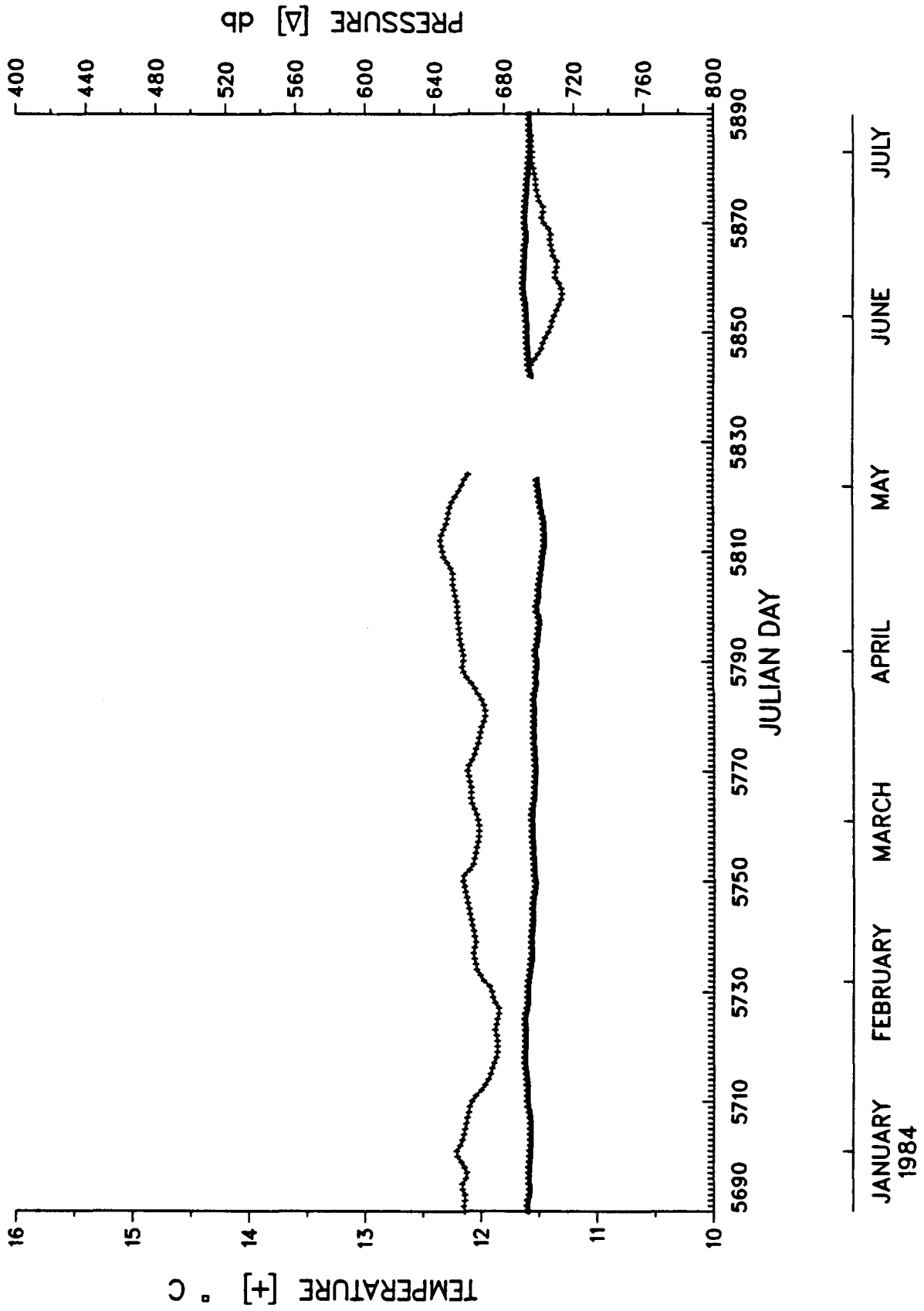


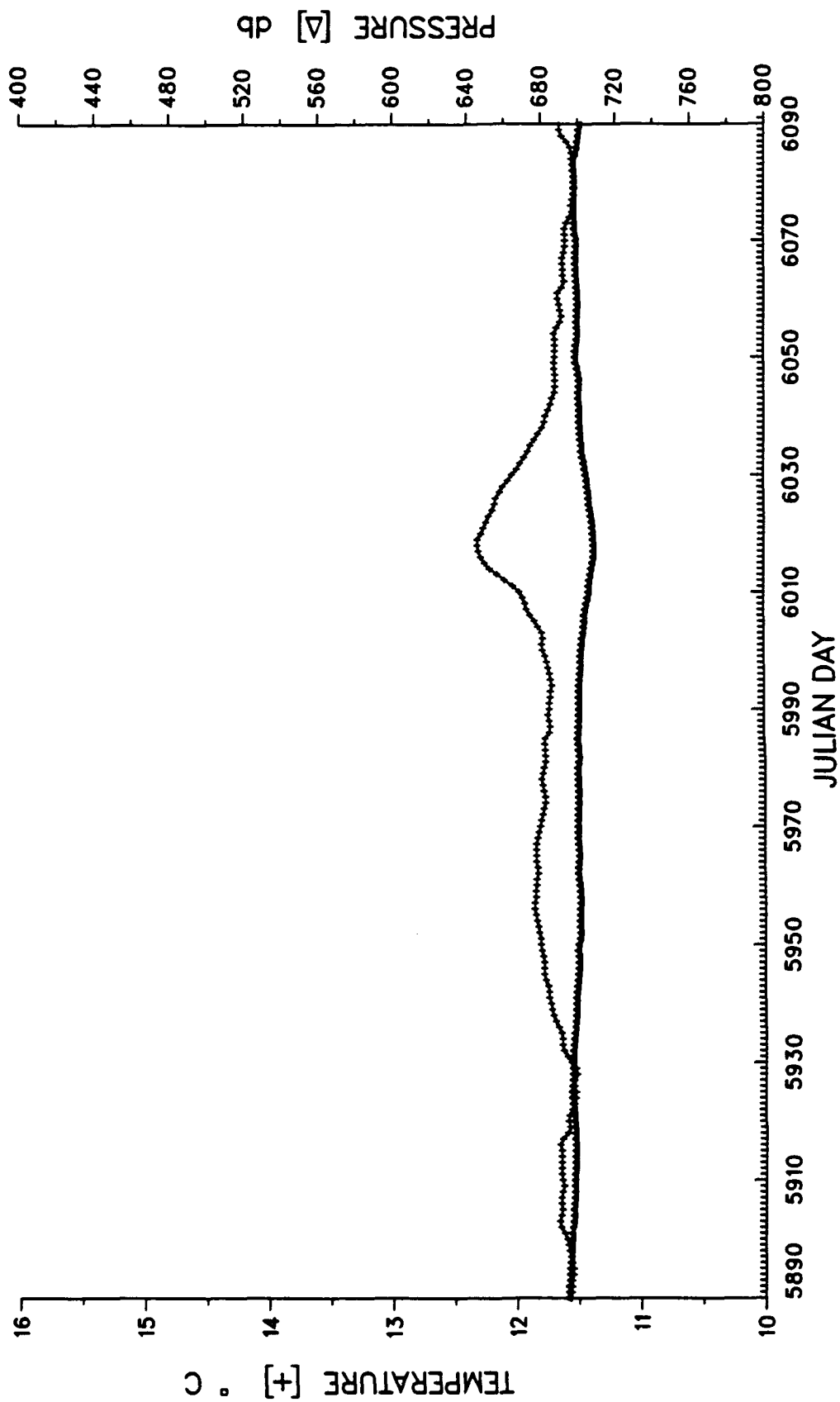
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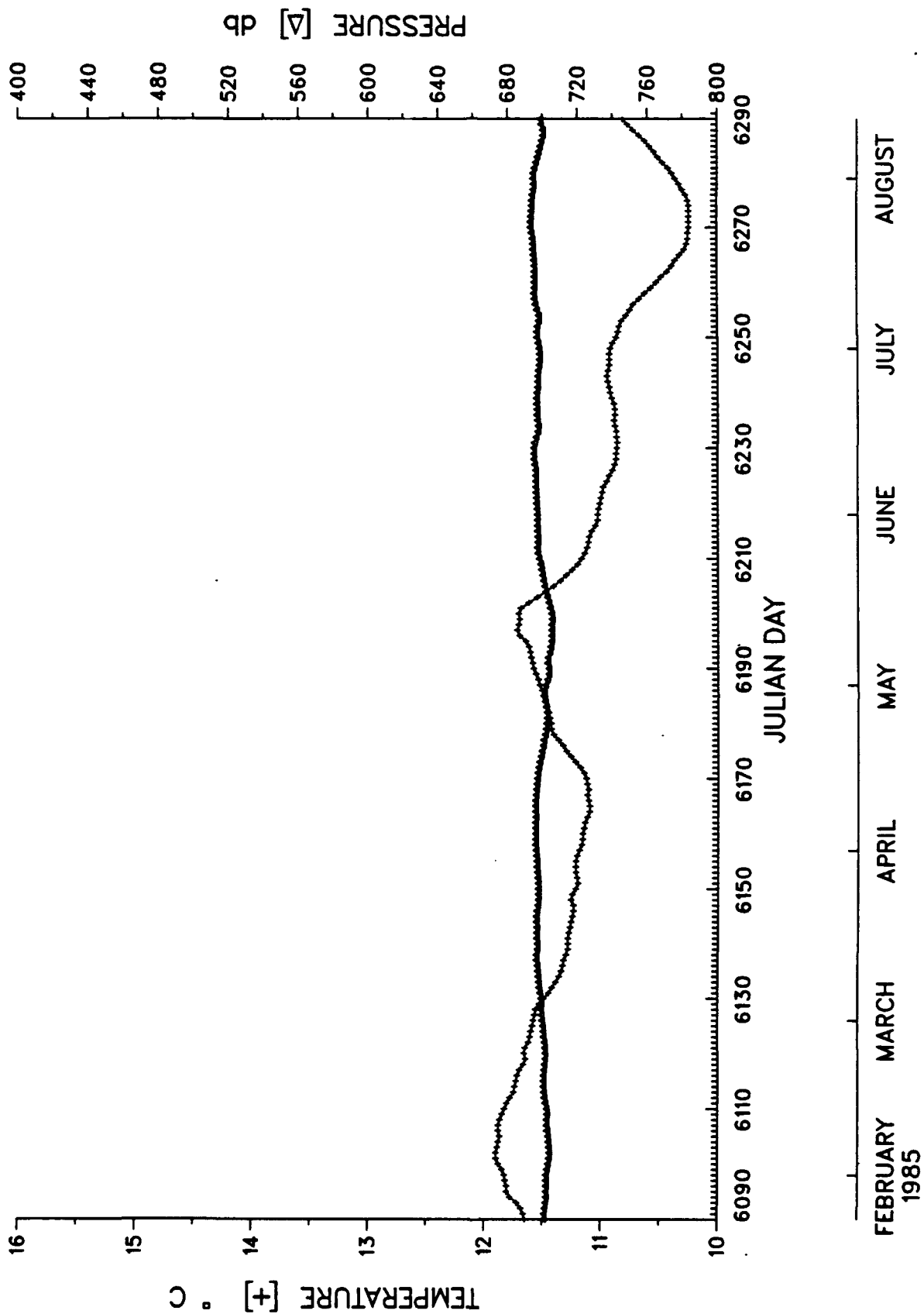


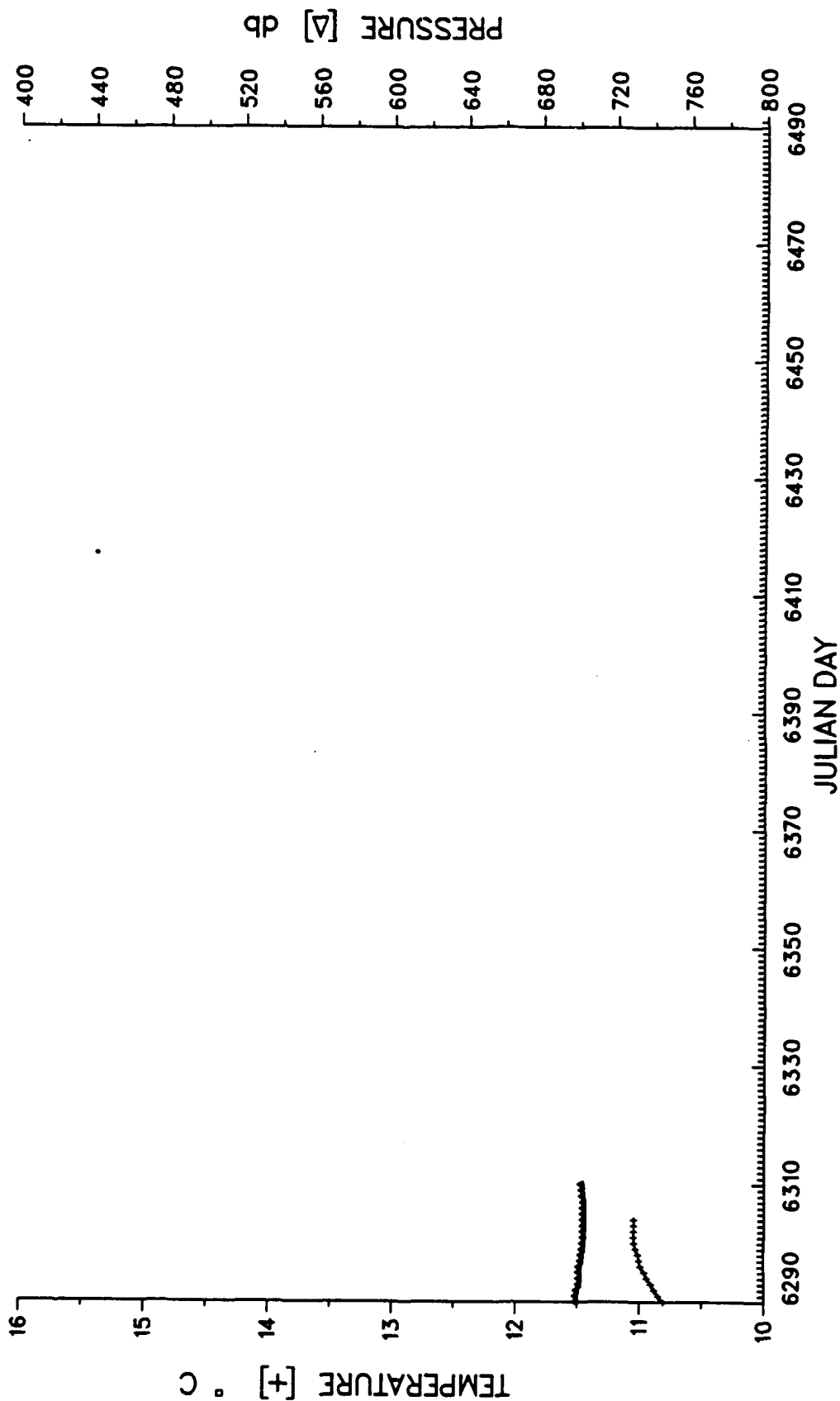




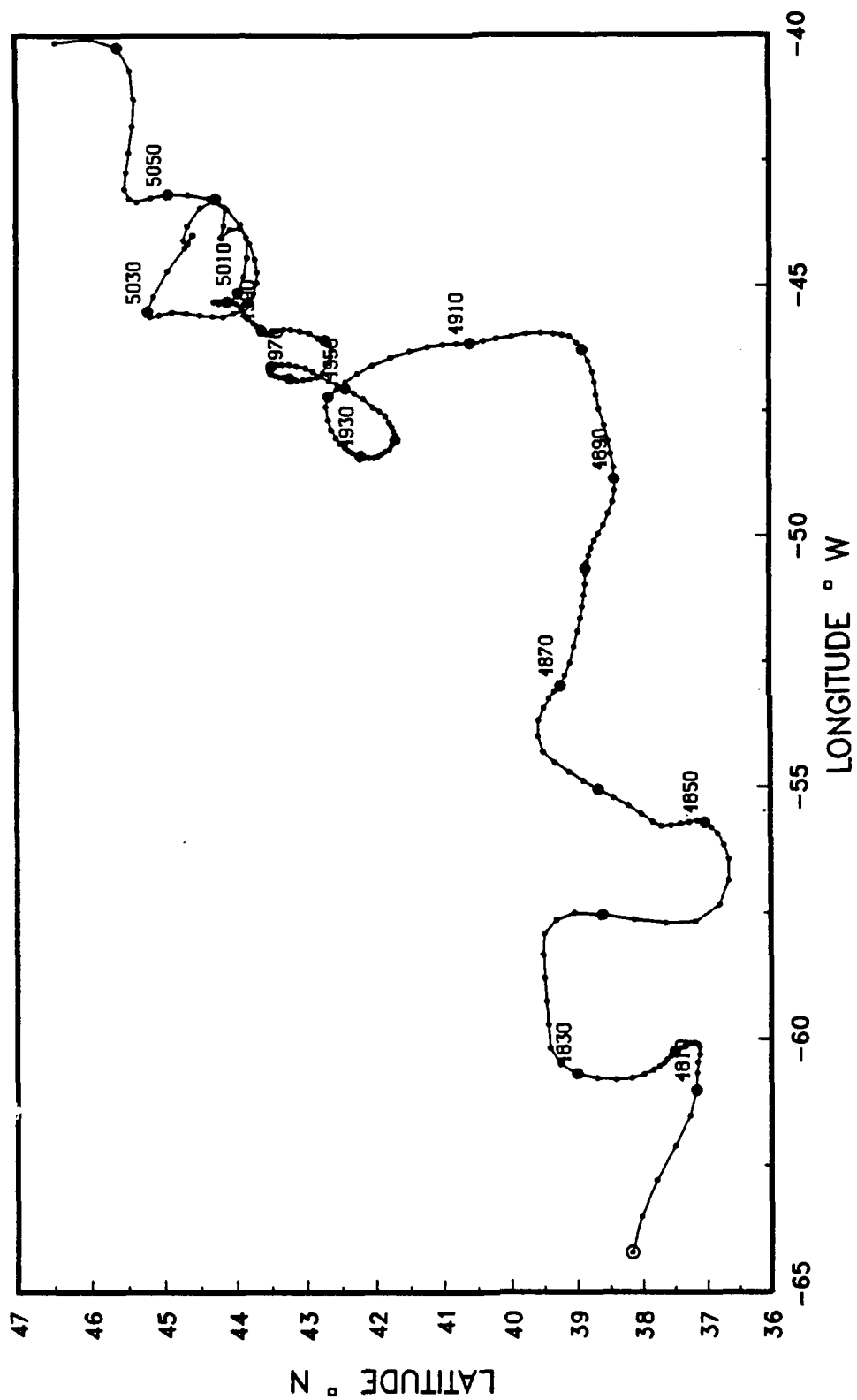


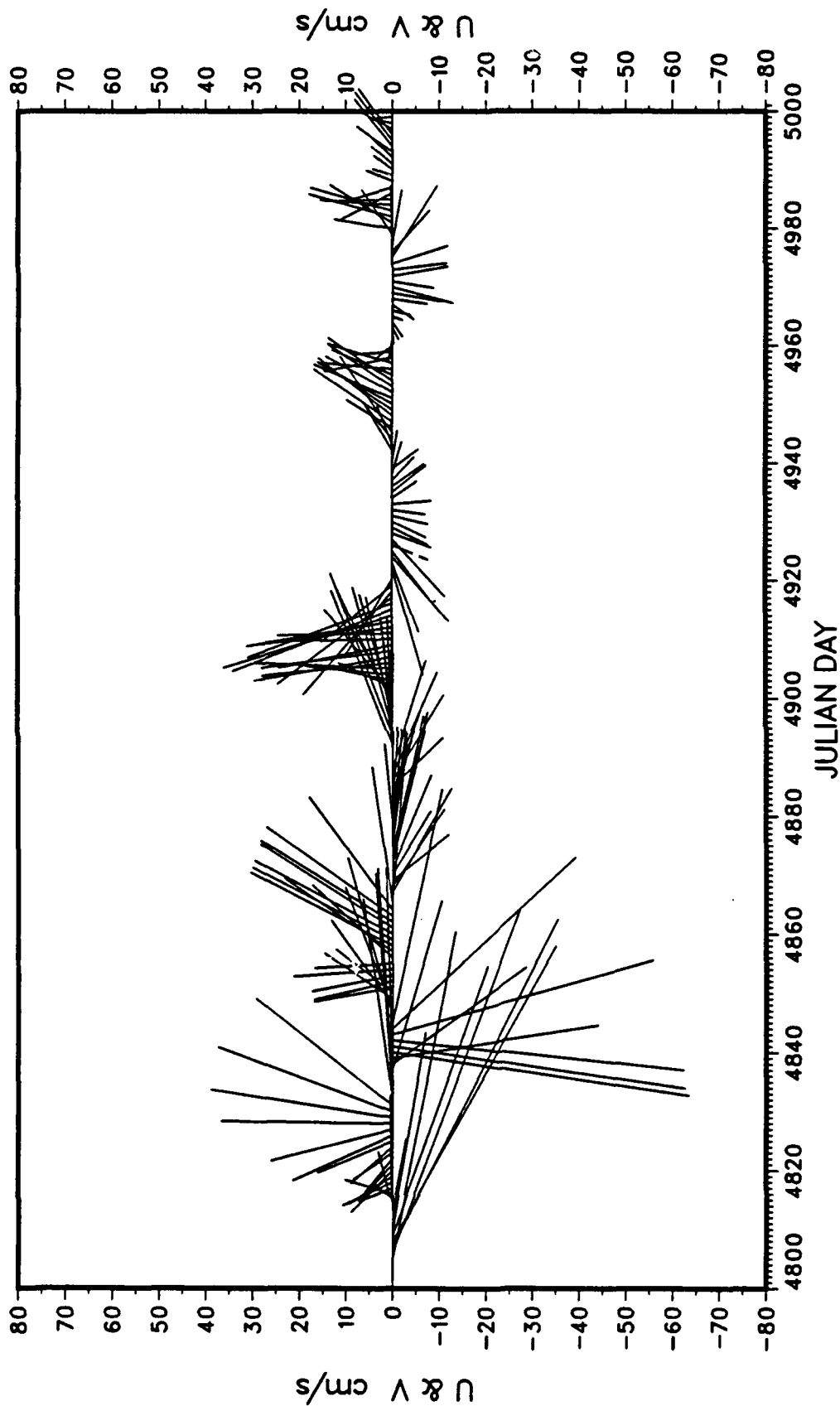




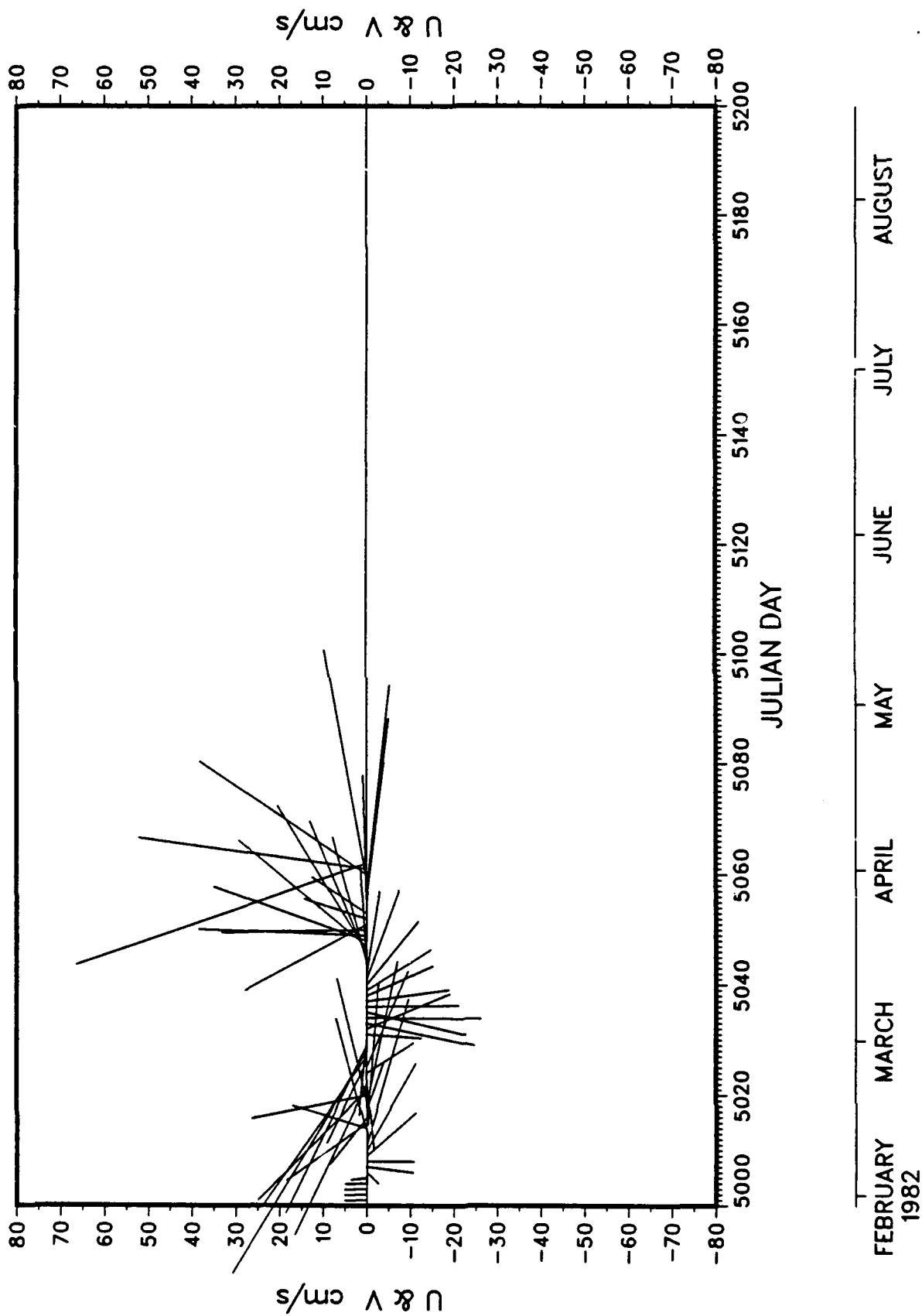


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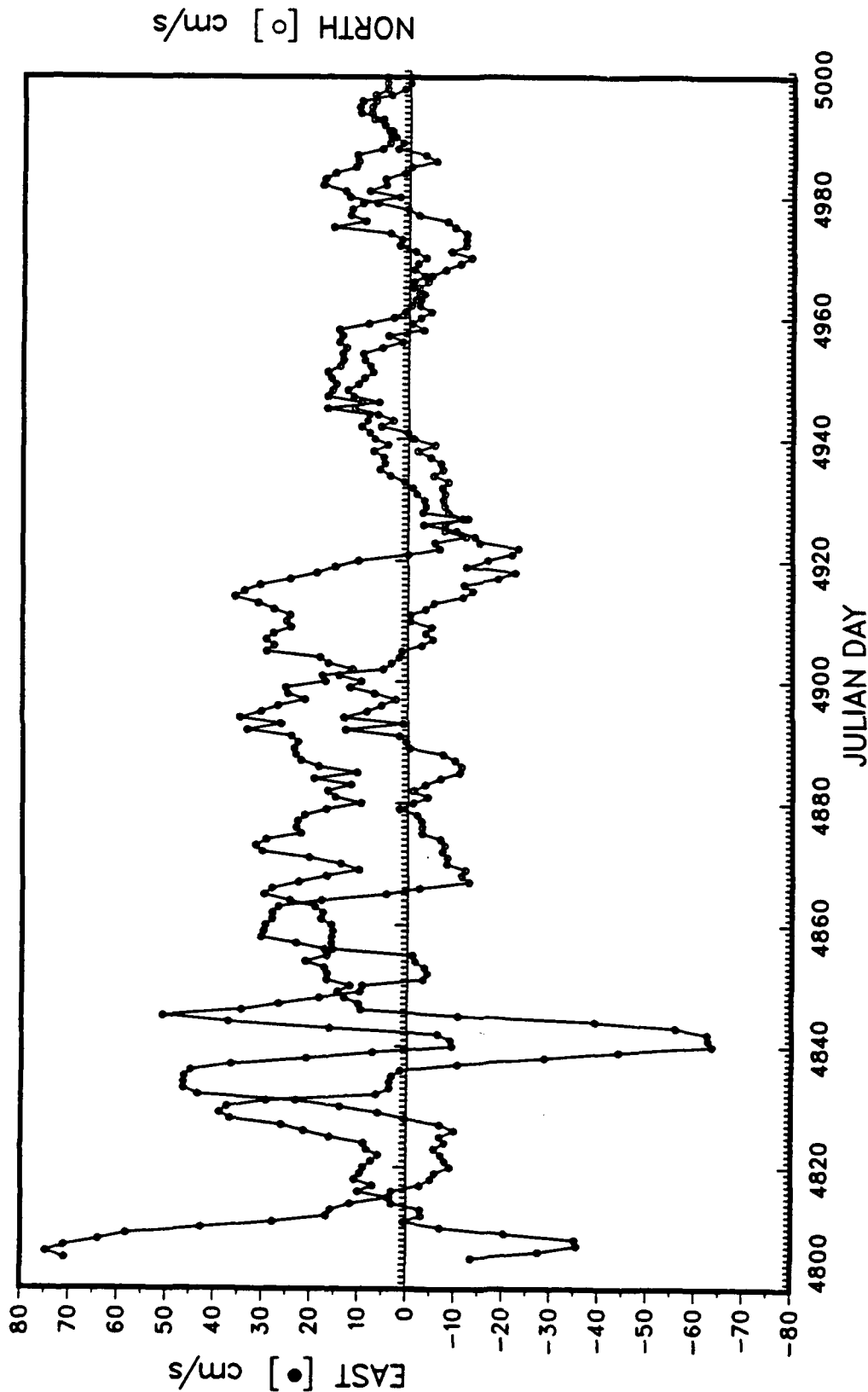




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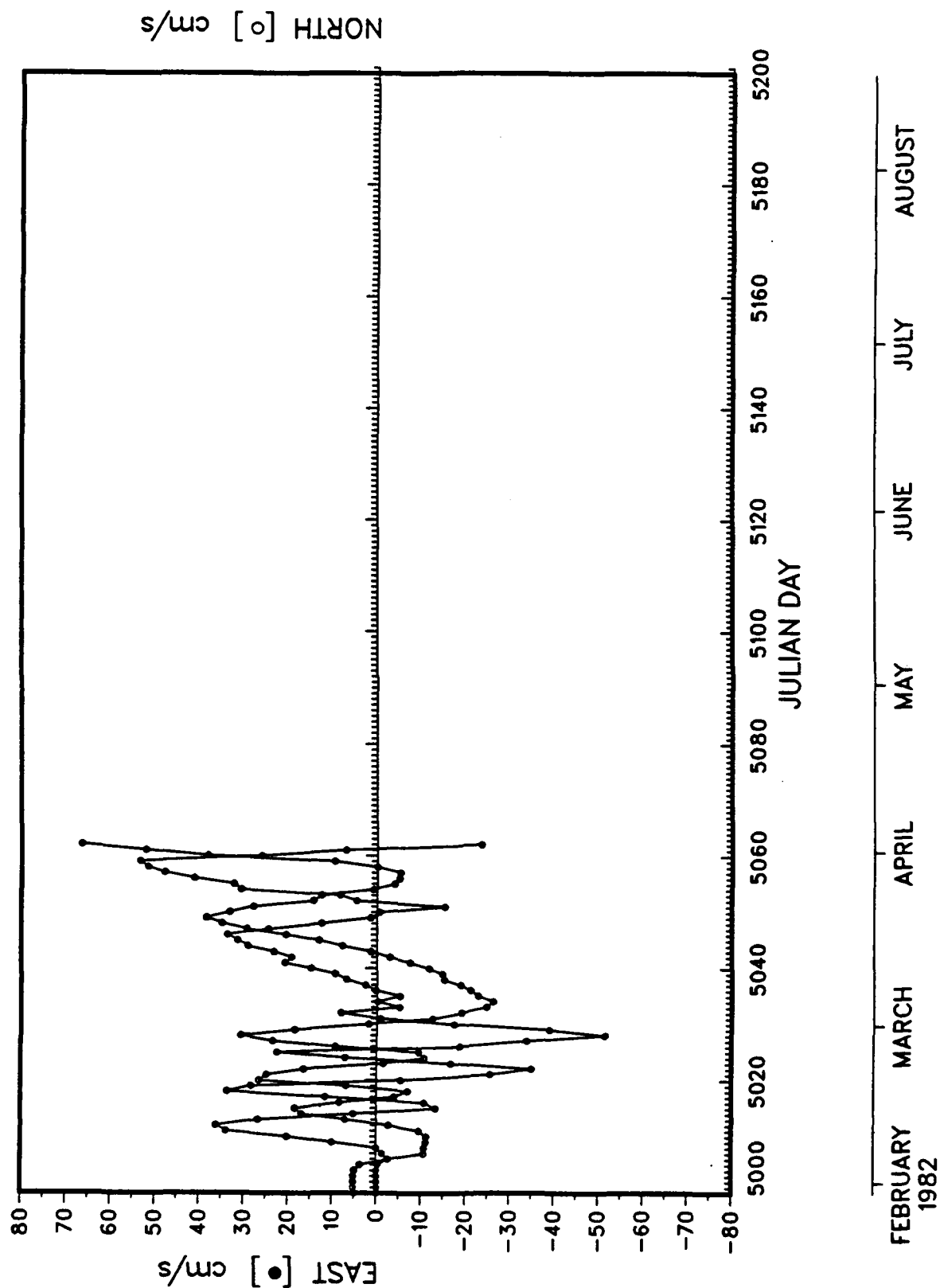


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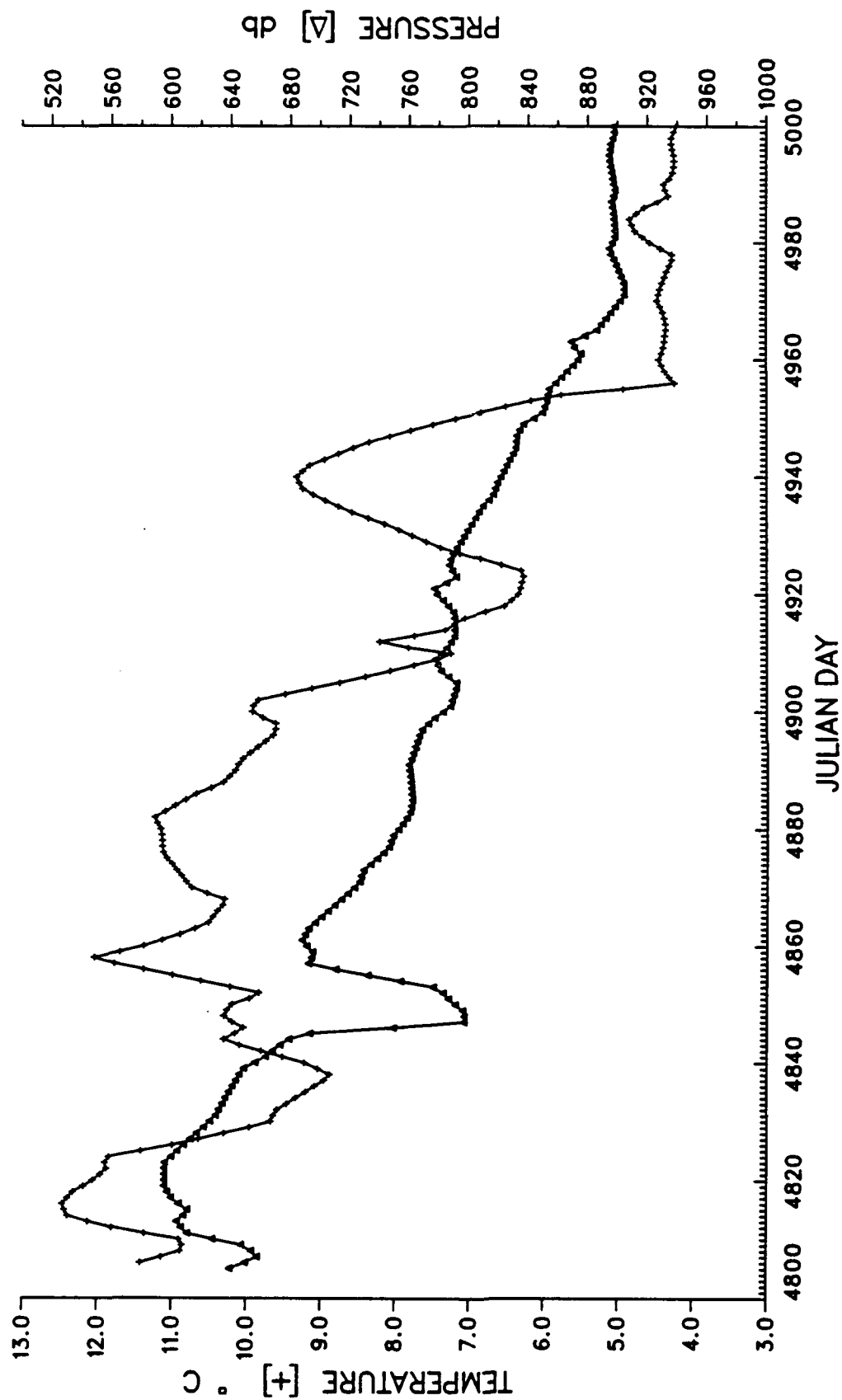


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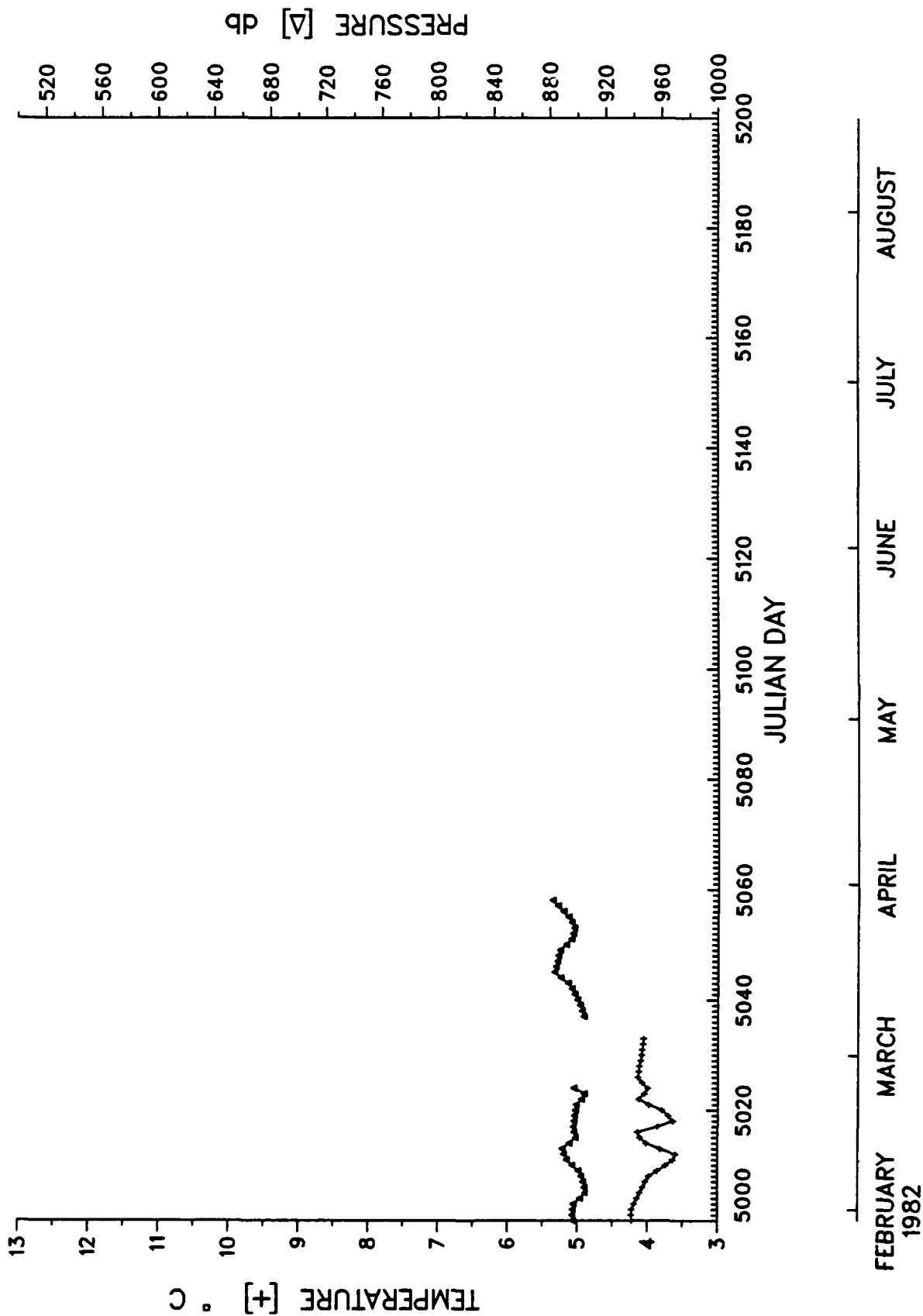
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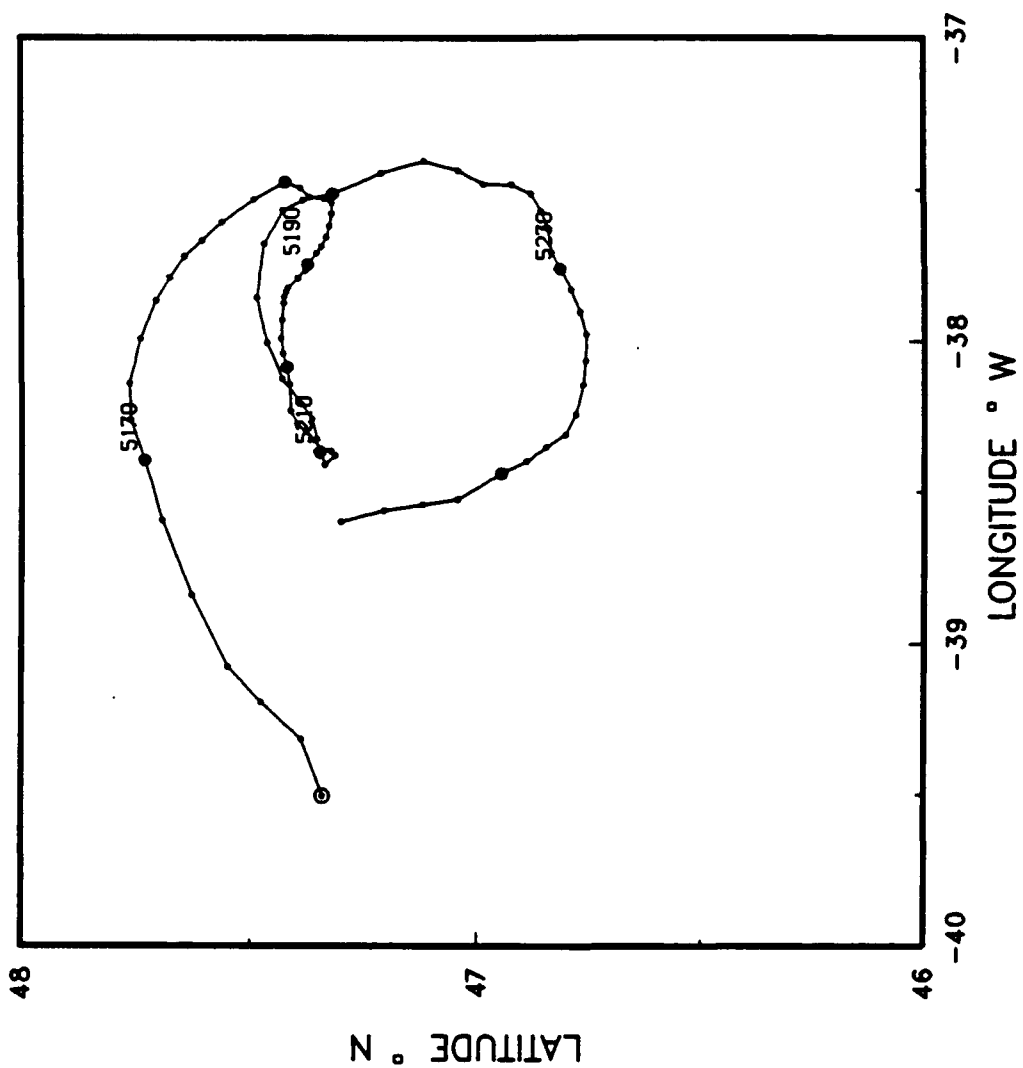
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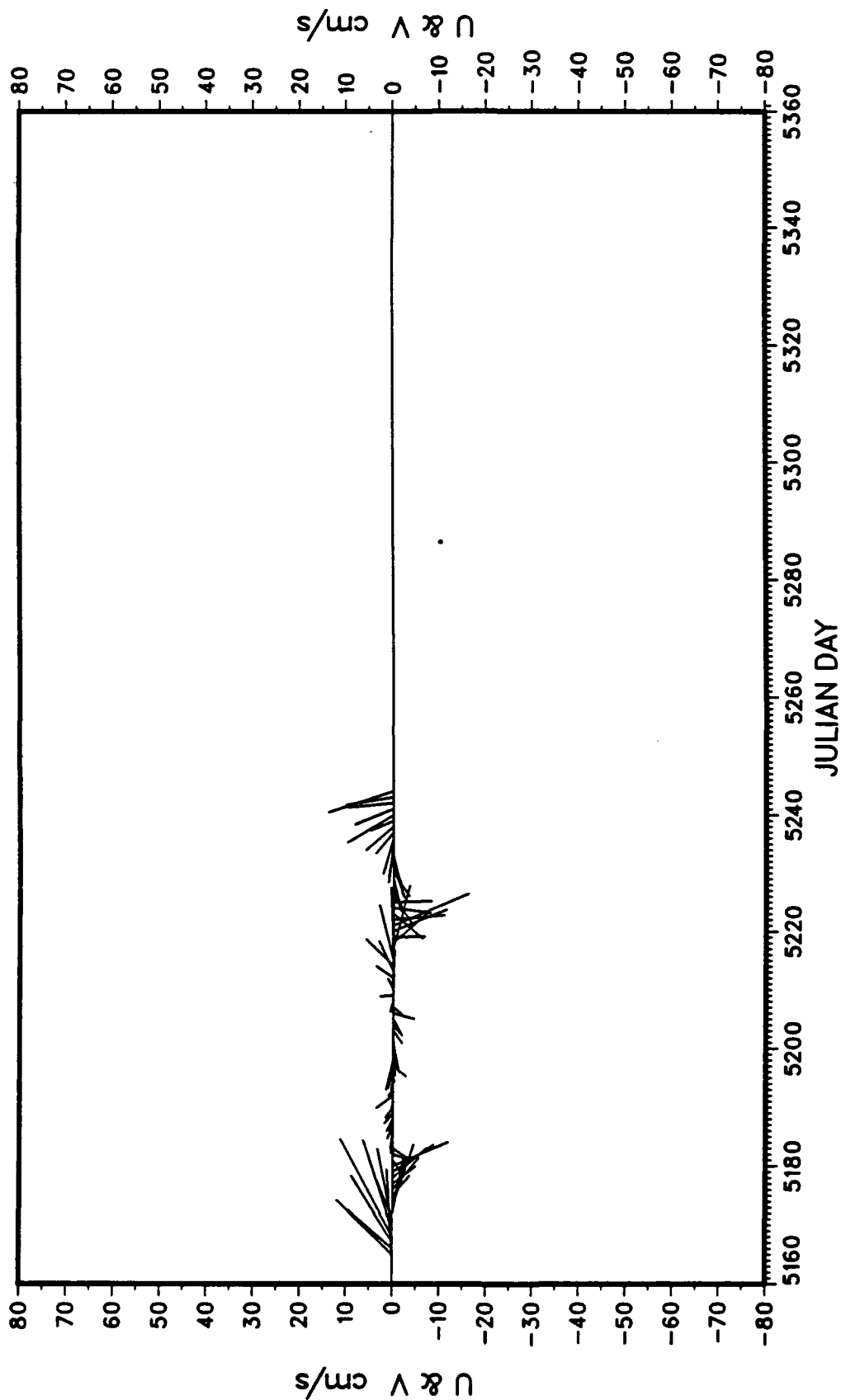


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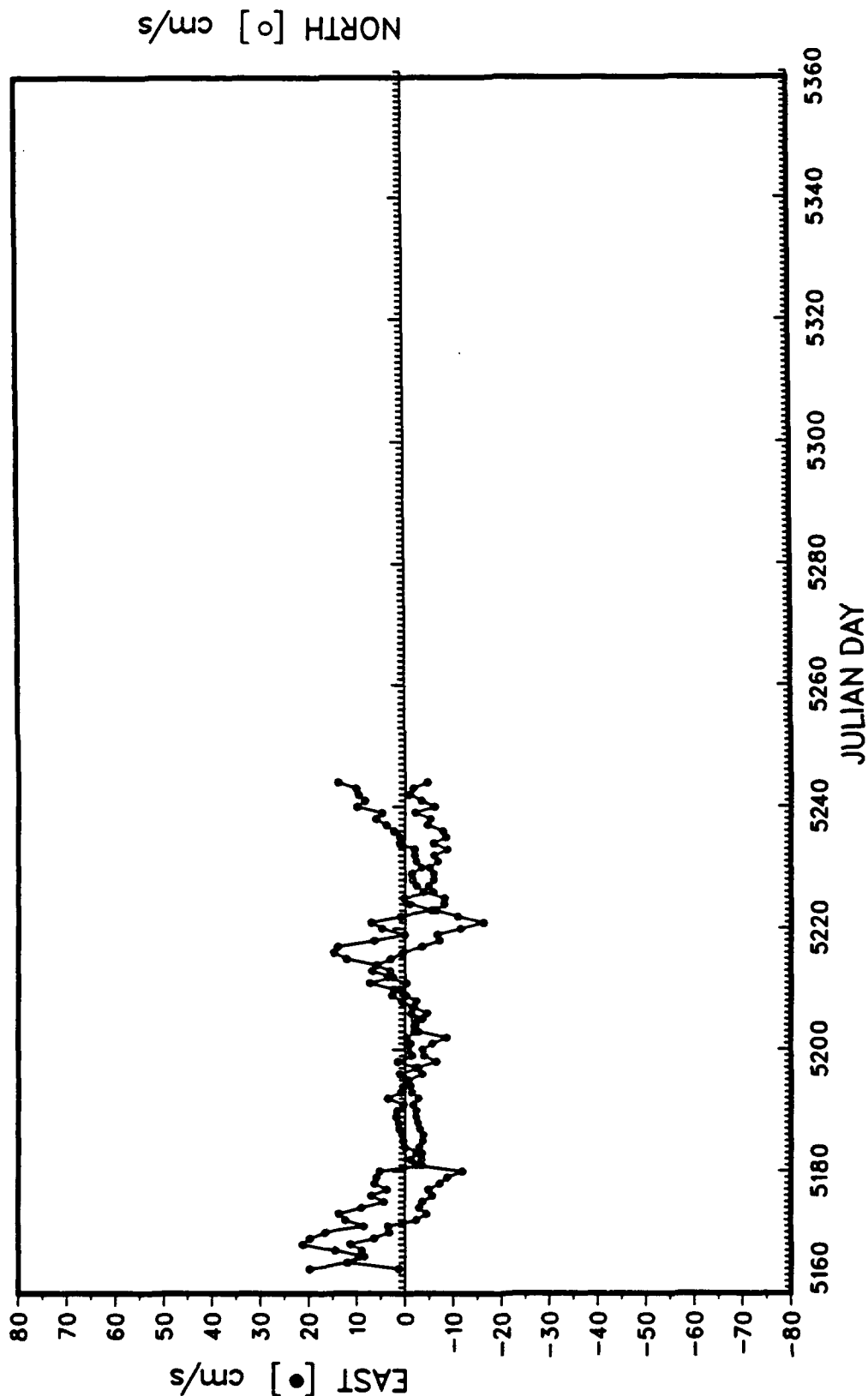
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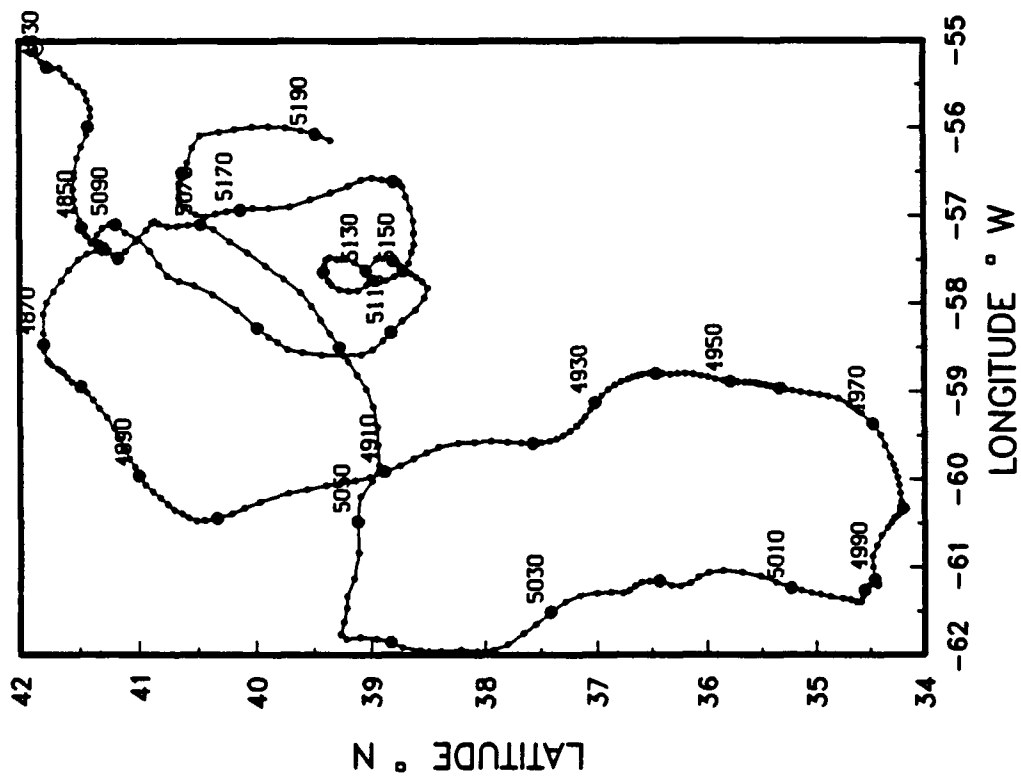


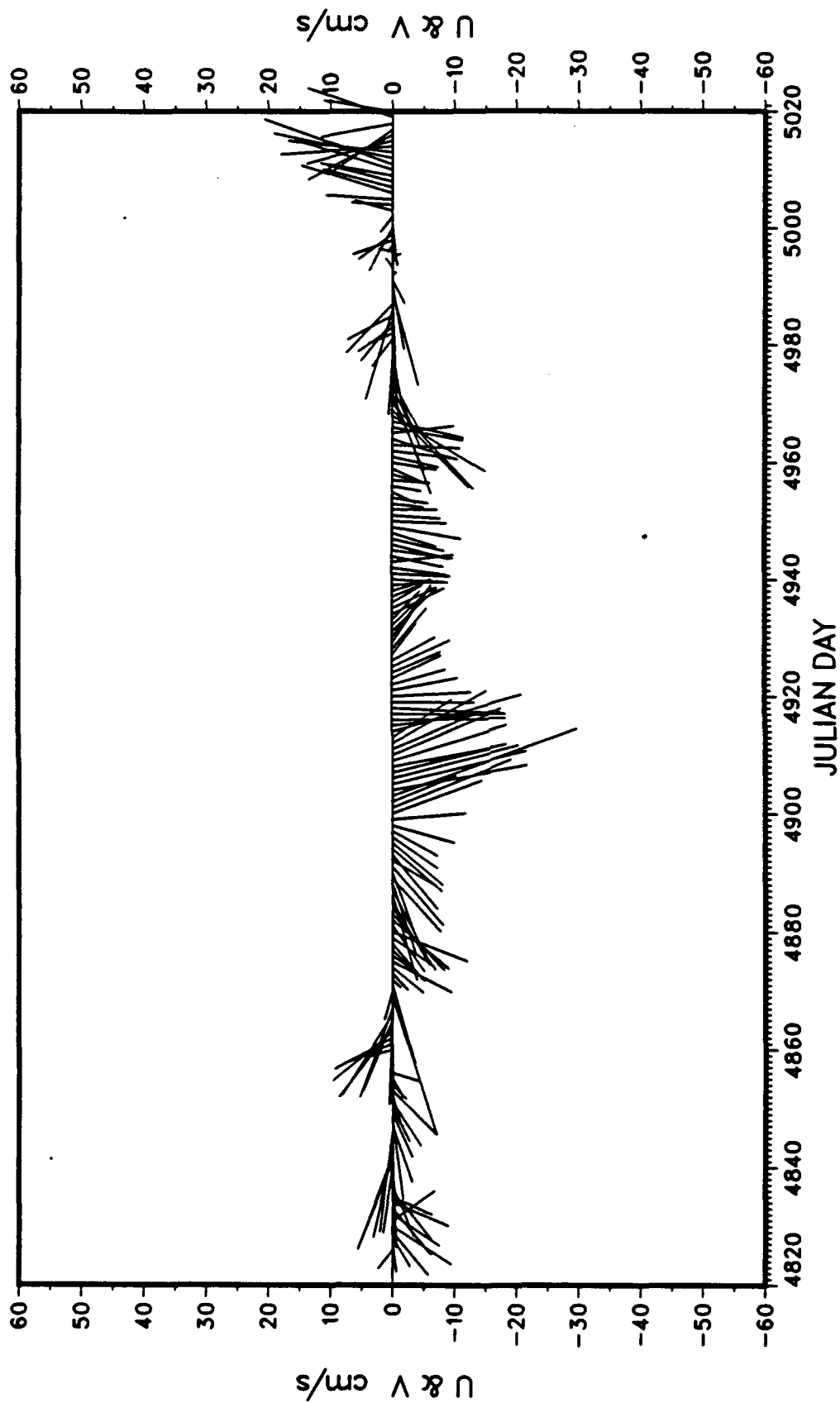
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GUSREX 120B

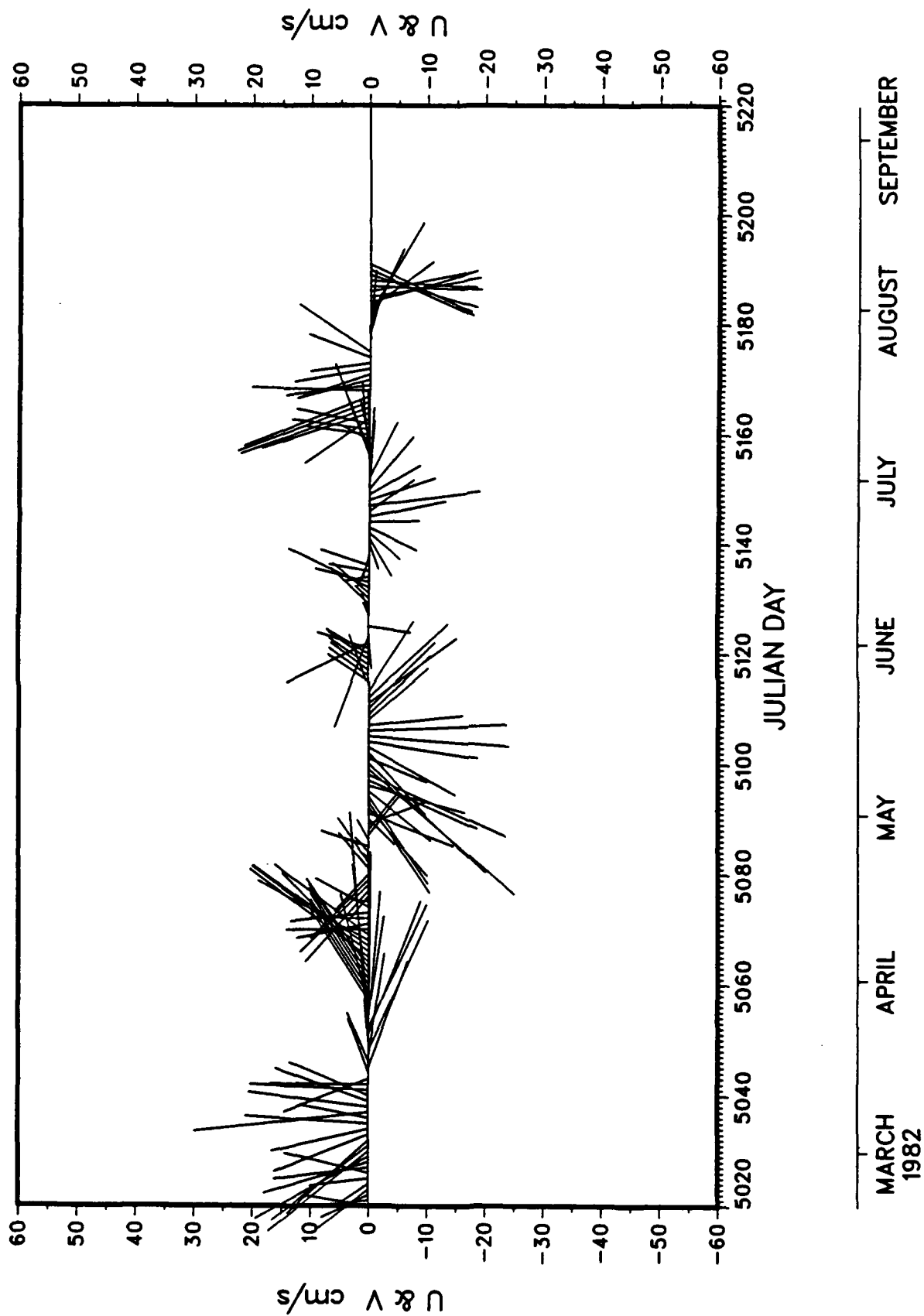


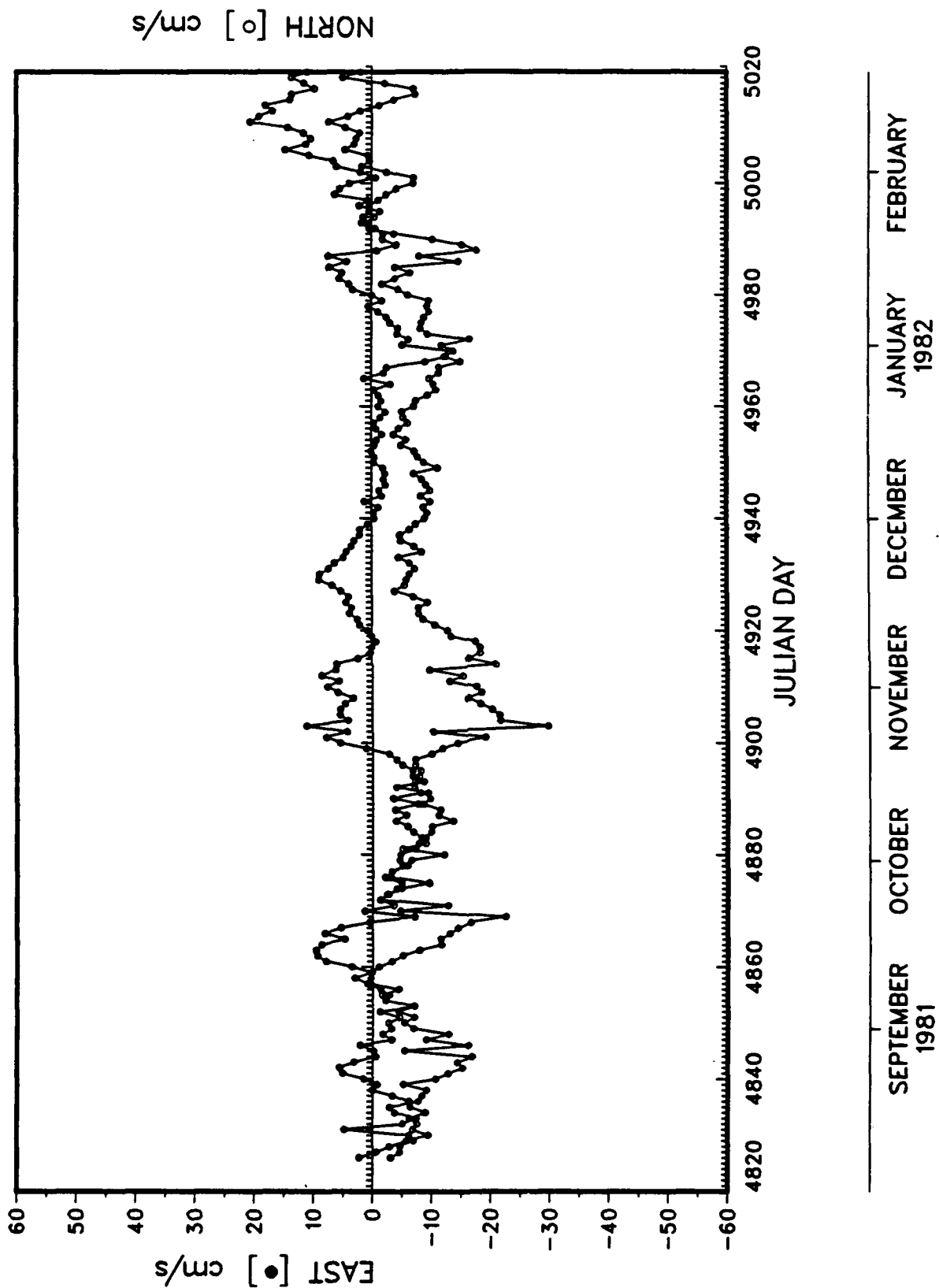
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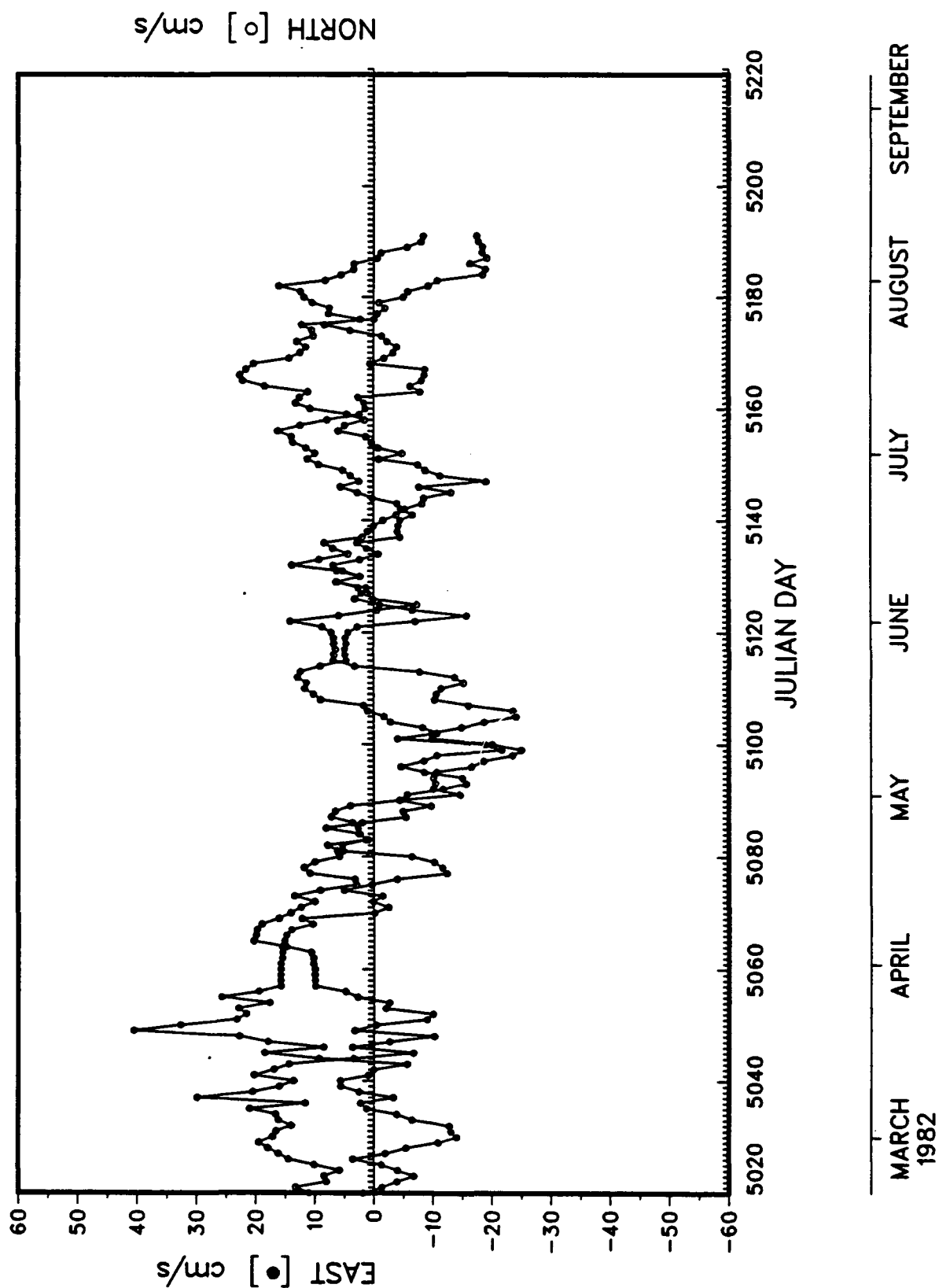




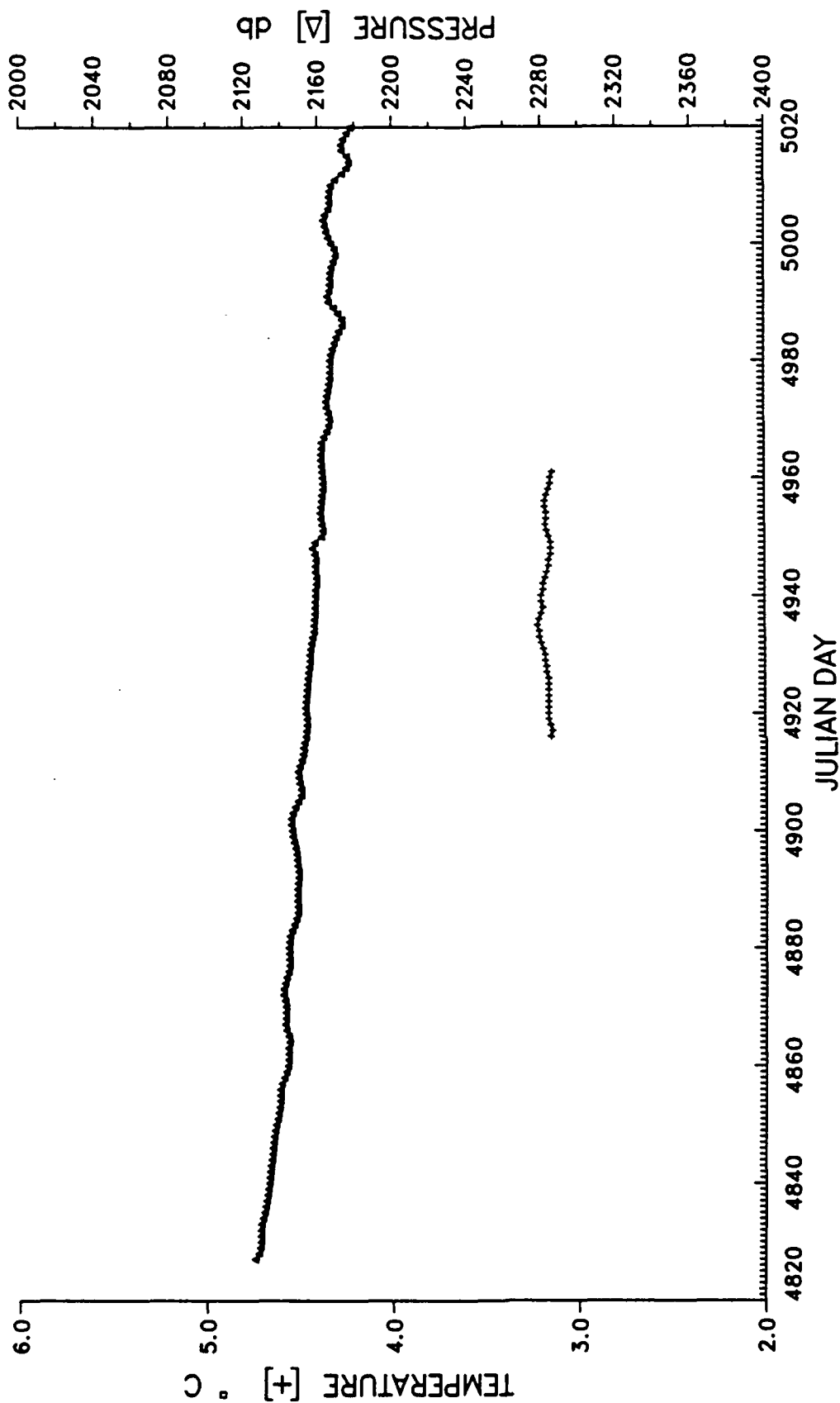
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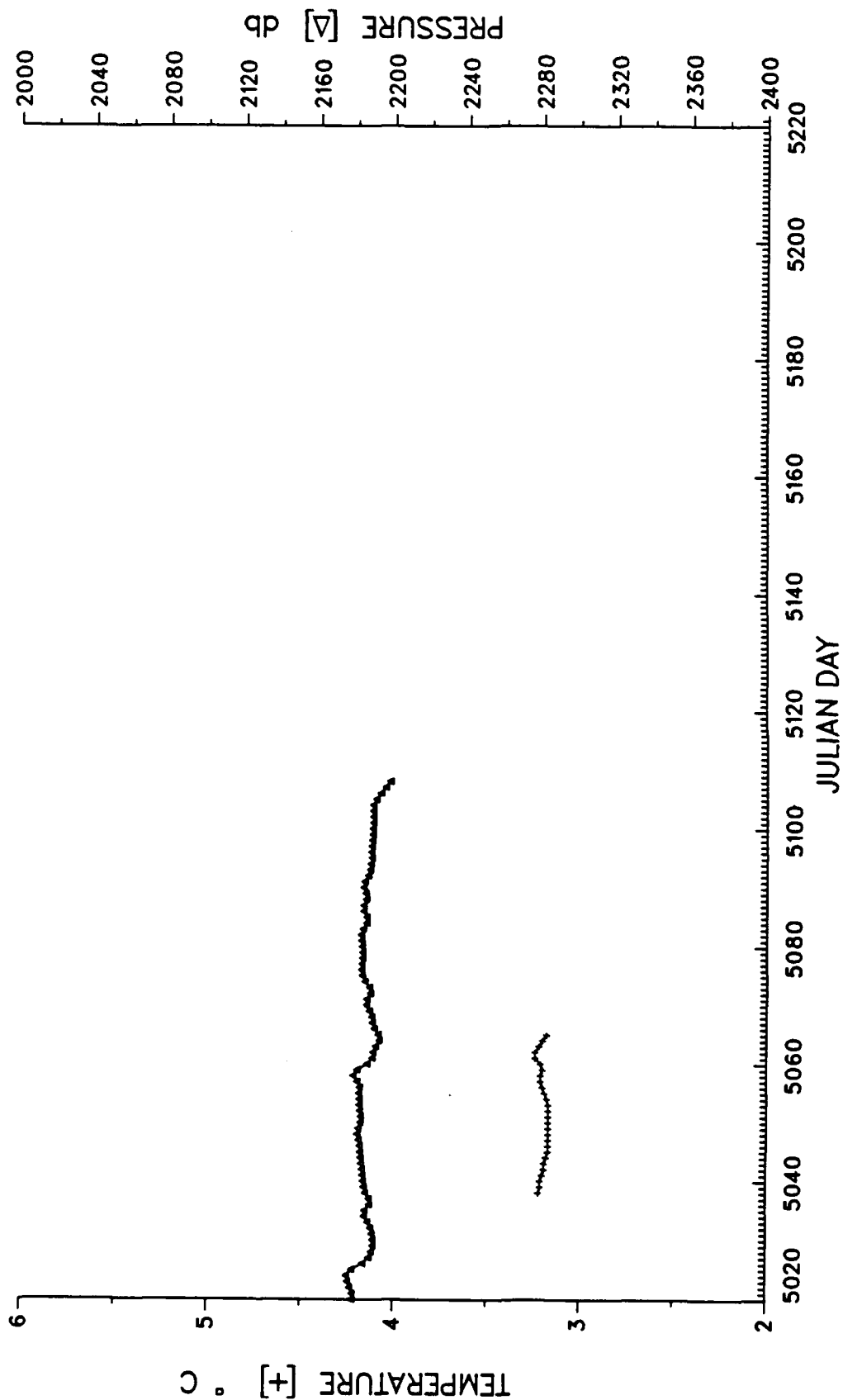




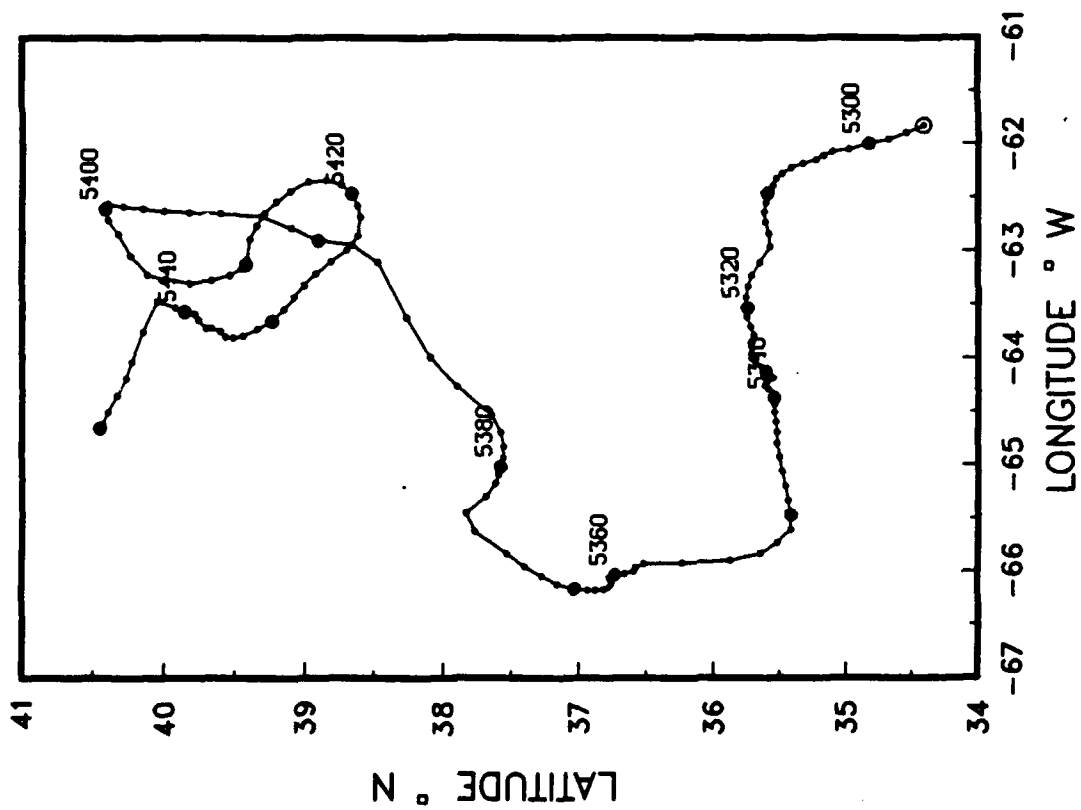


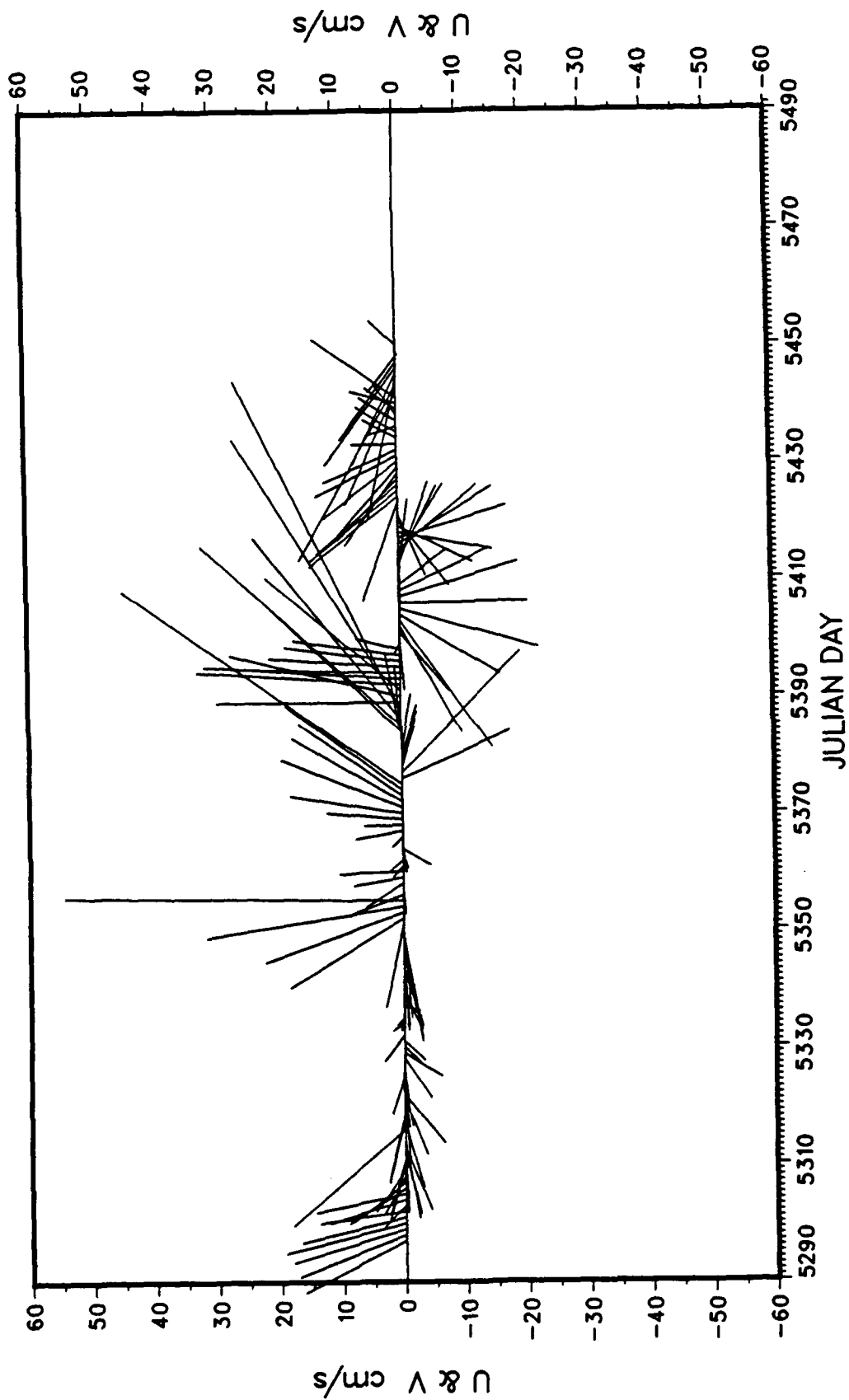
GUSREX 162A





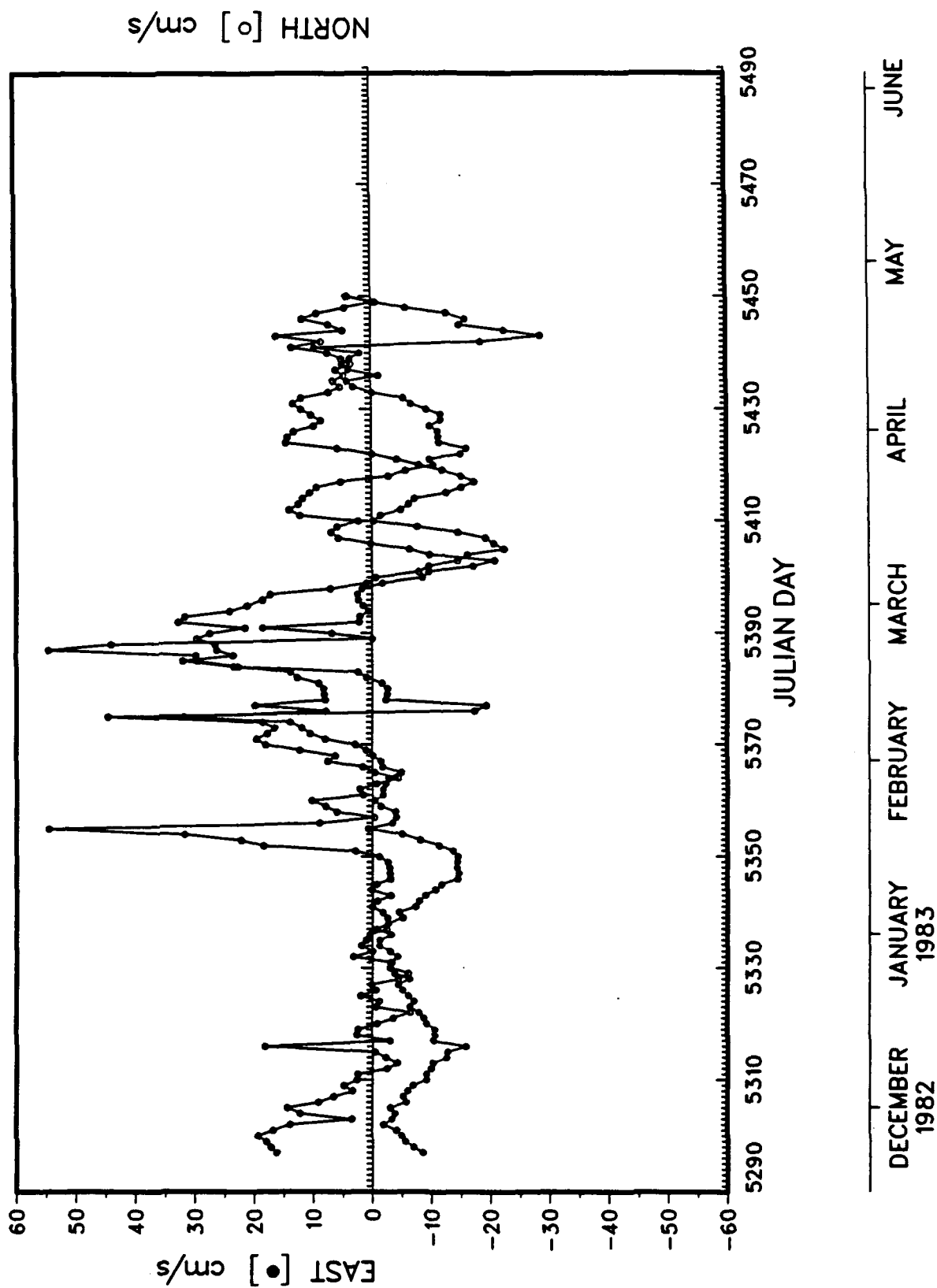
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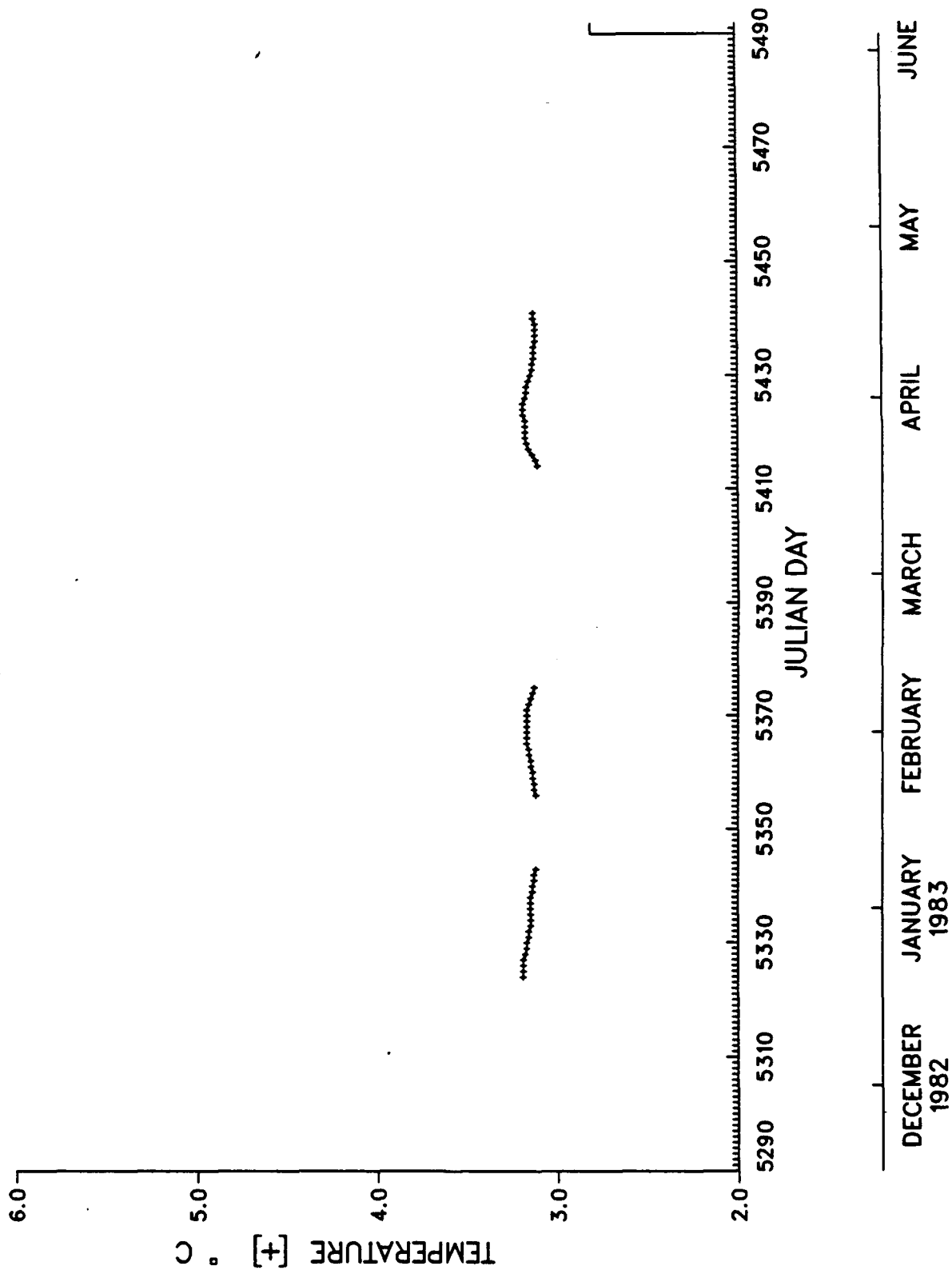




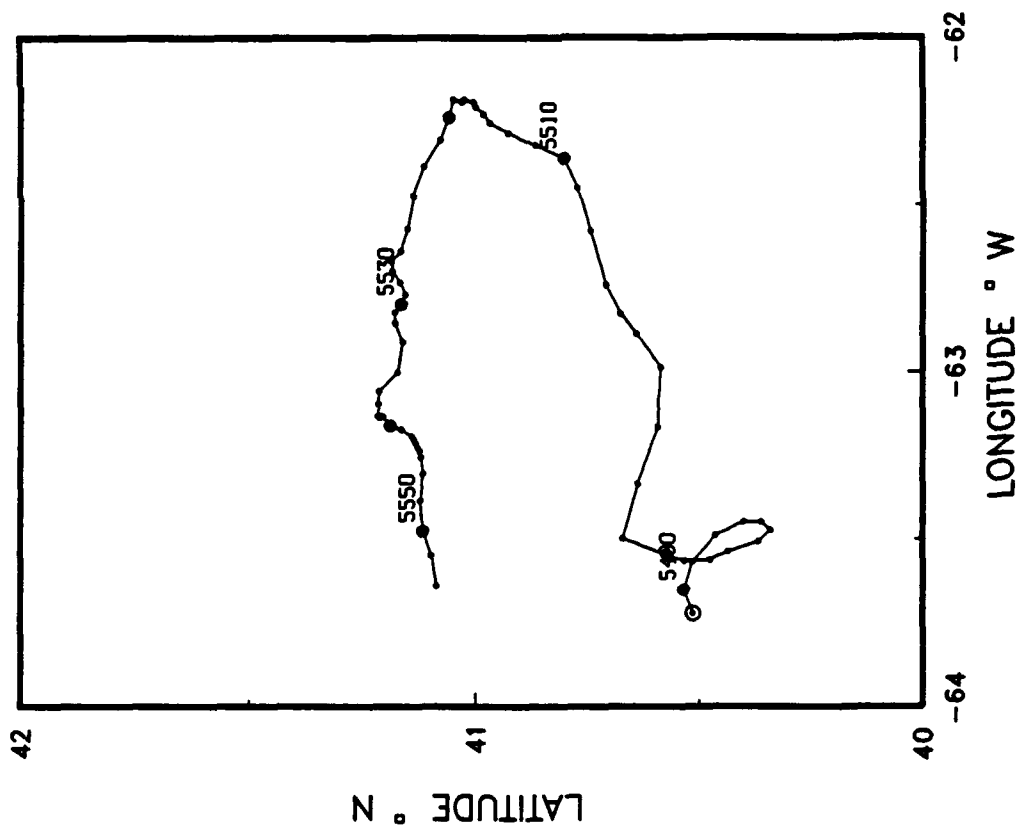
DECEMBER 1982 JANUARY 1983 FEBRUARY MARCH APRIL MAY JUNE

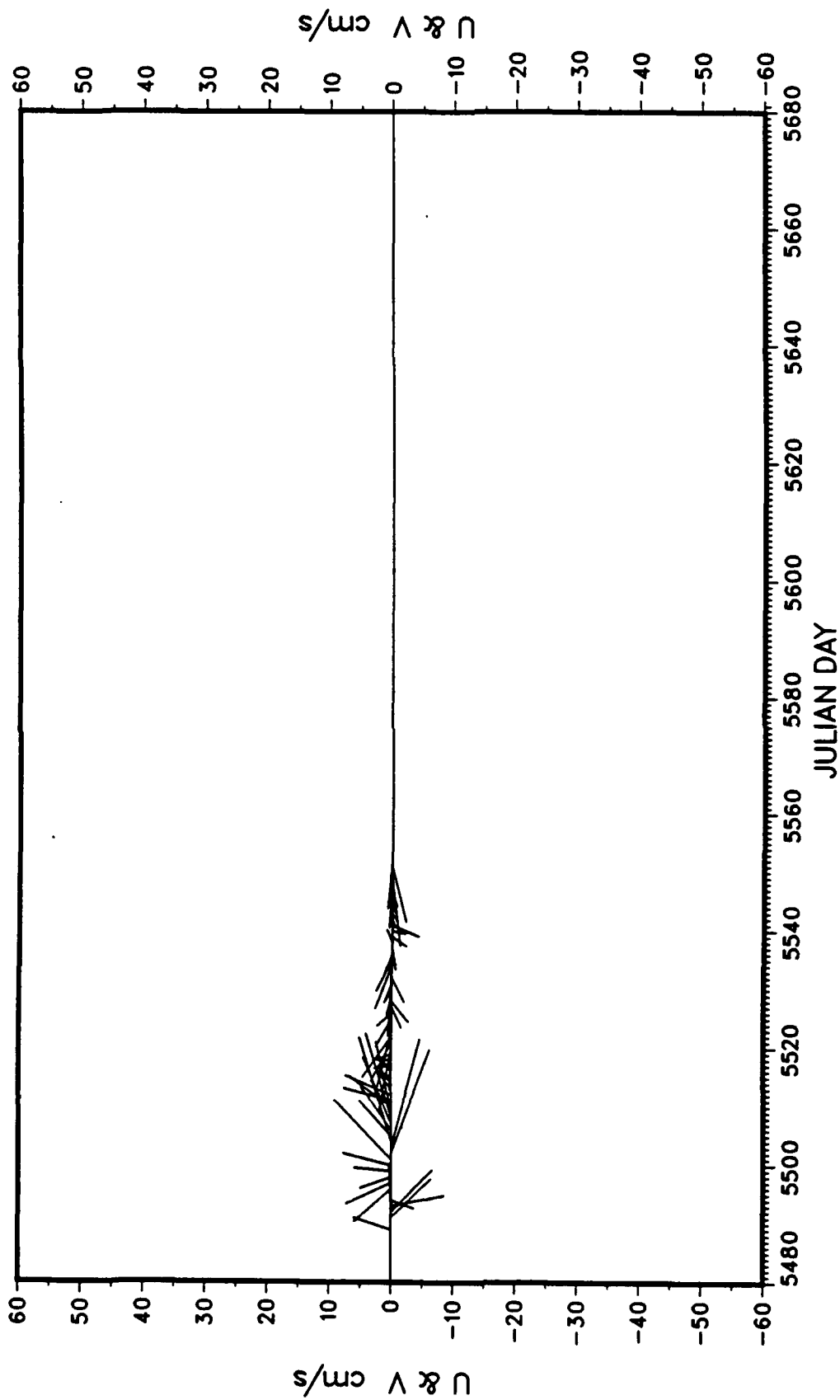
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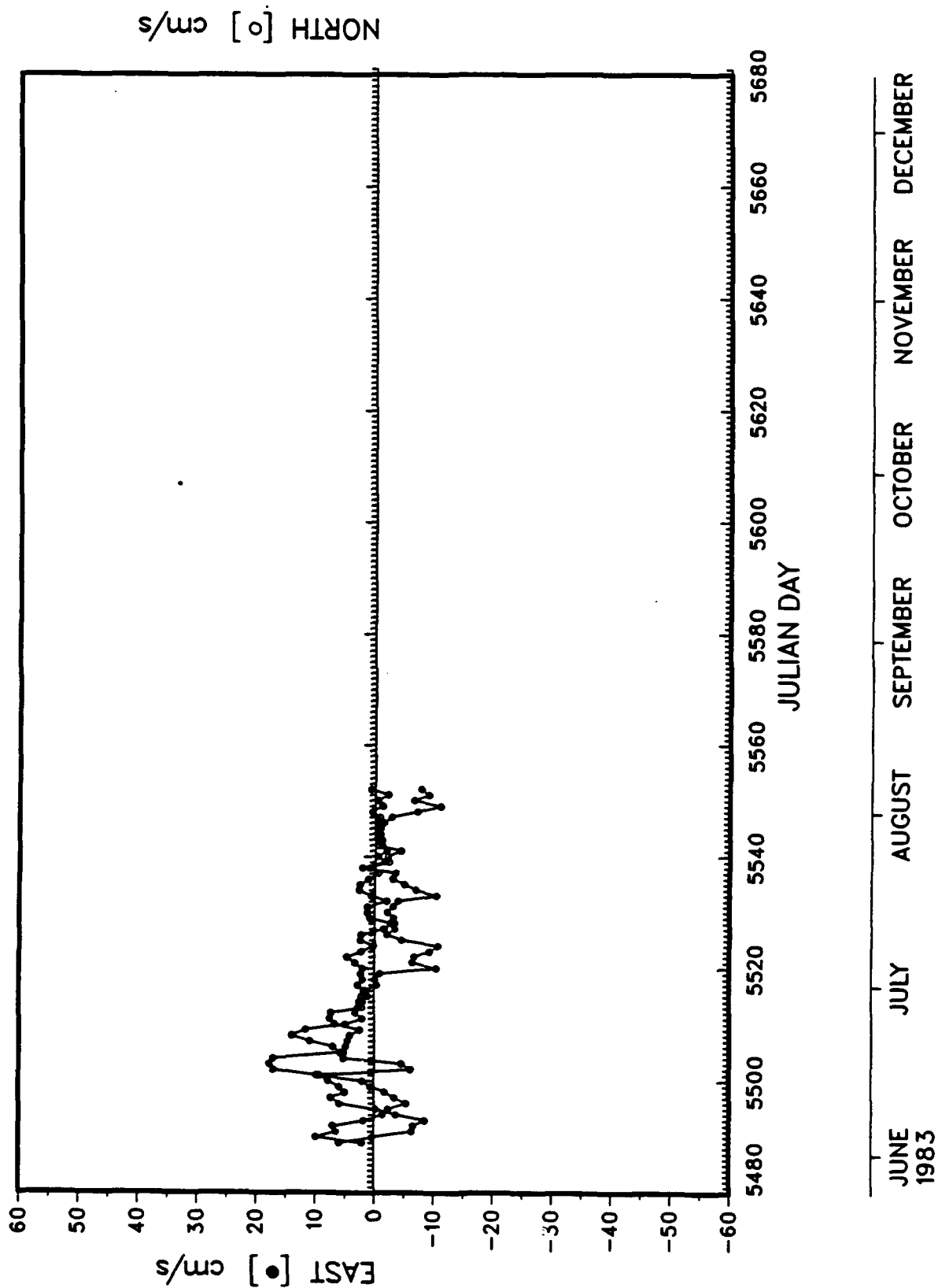
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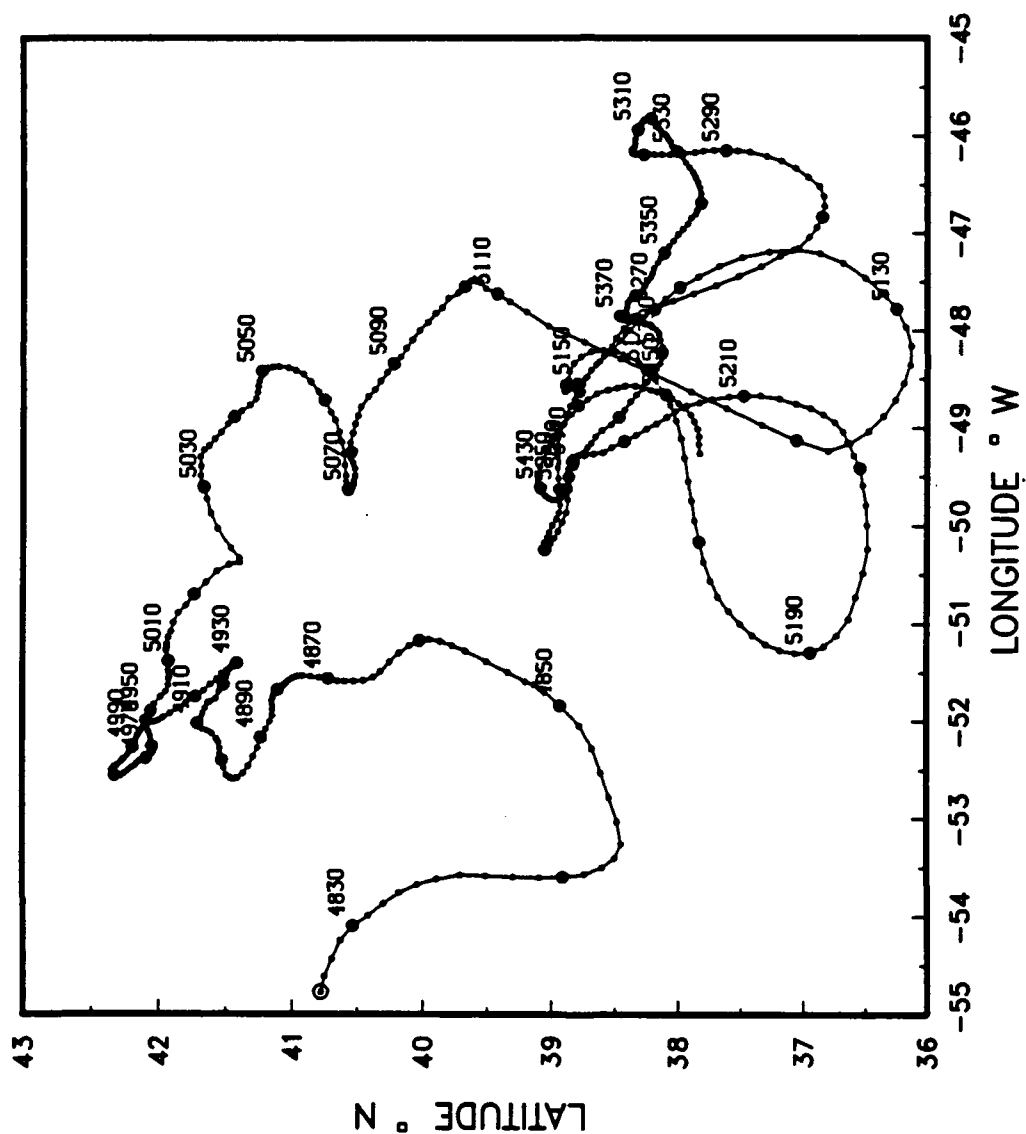




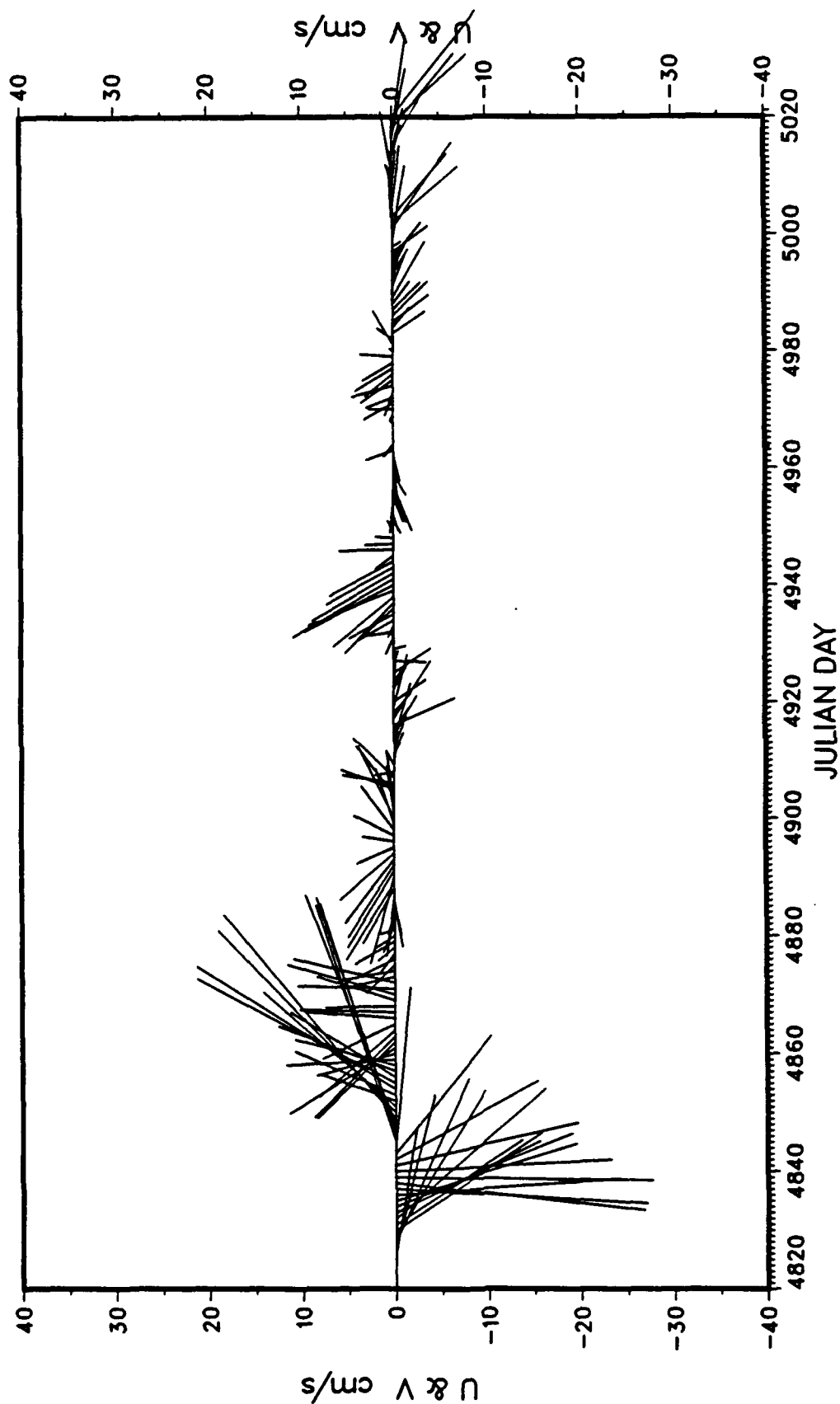
JUNE 1983 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

GUSREX 162C

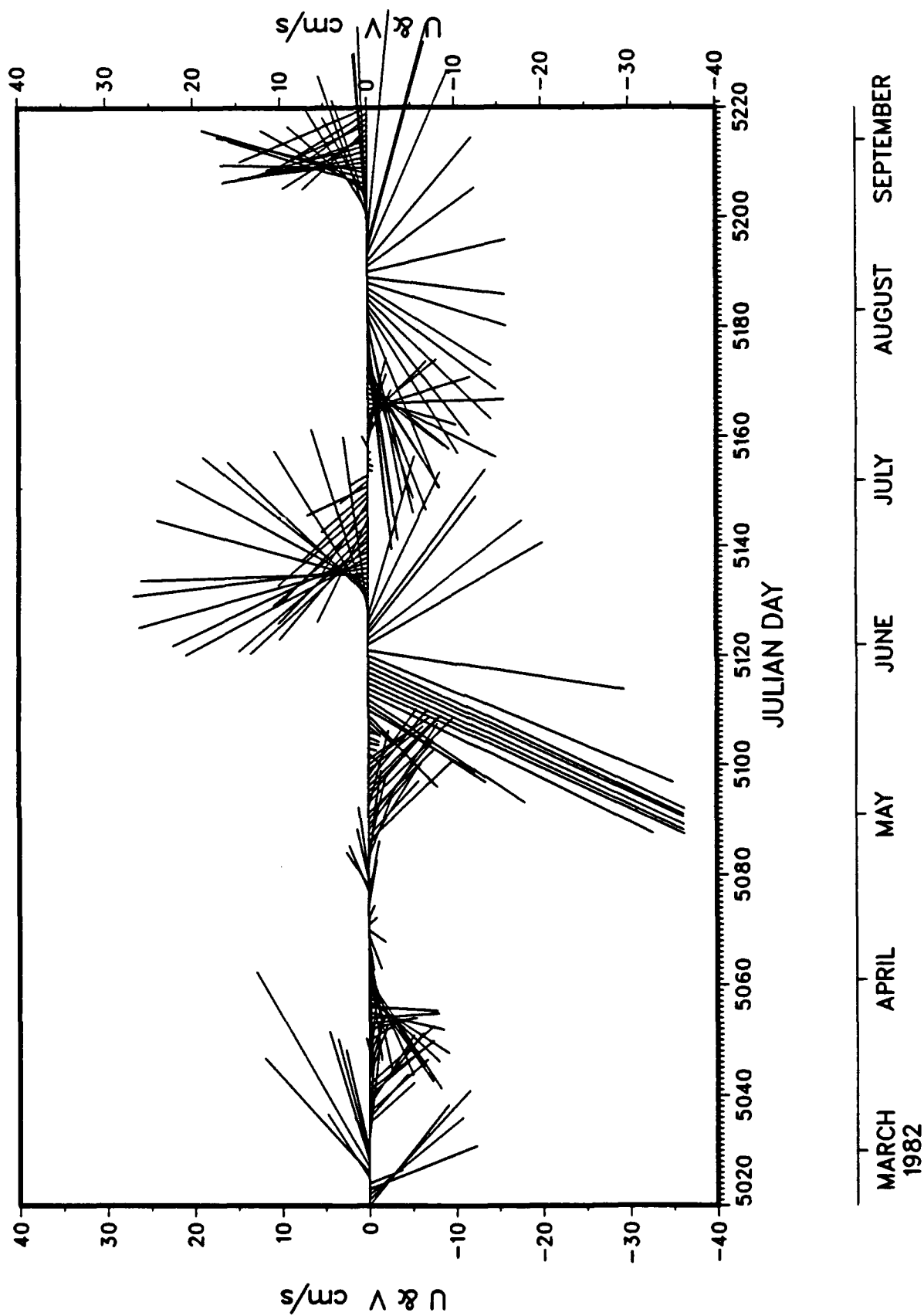




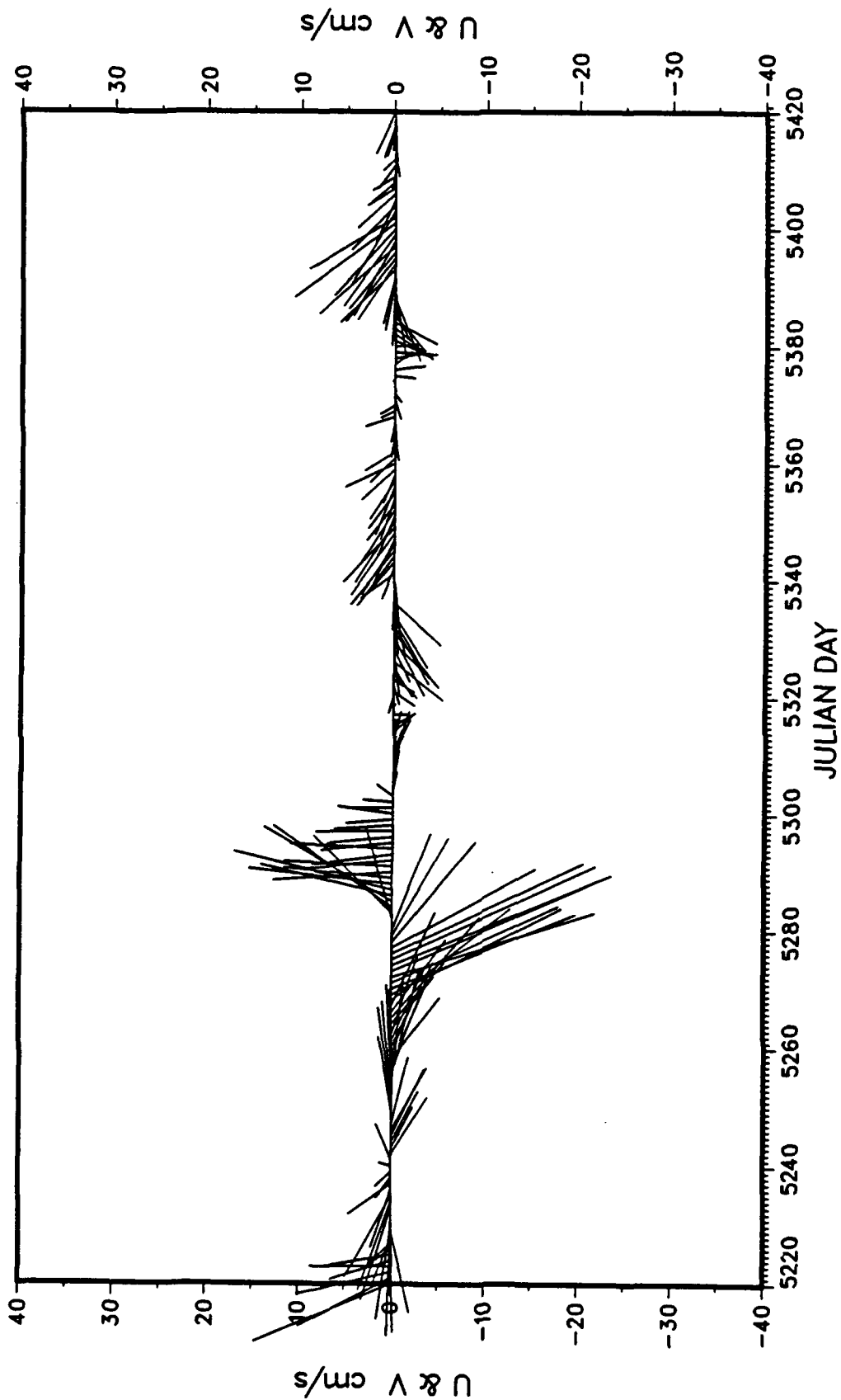
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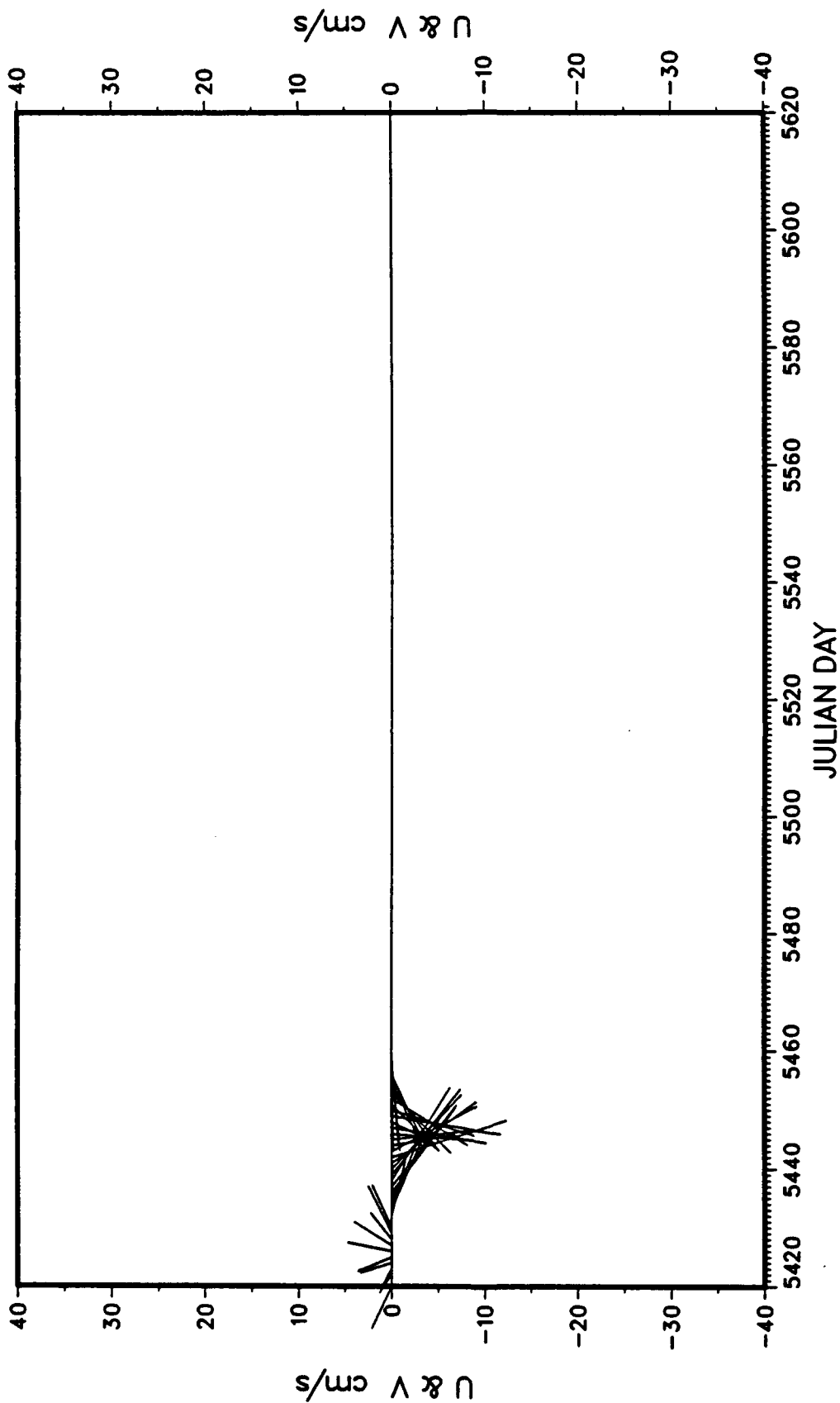
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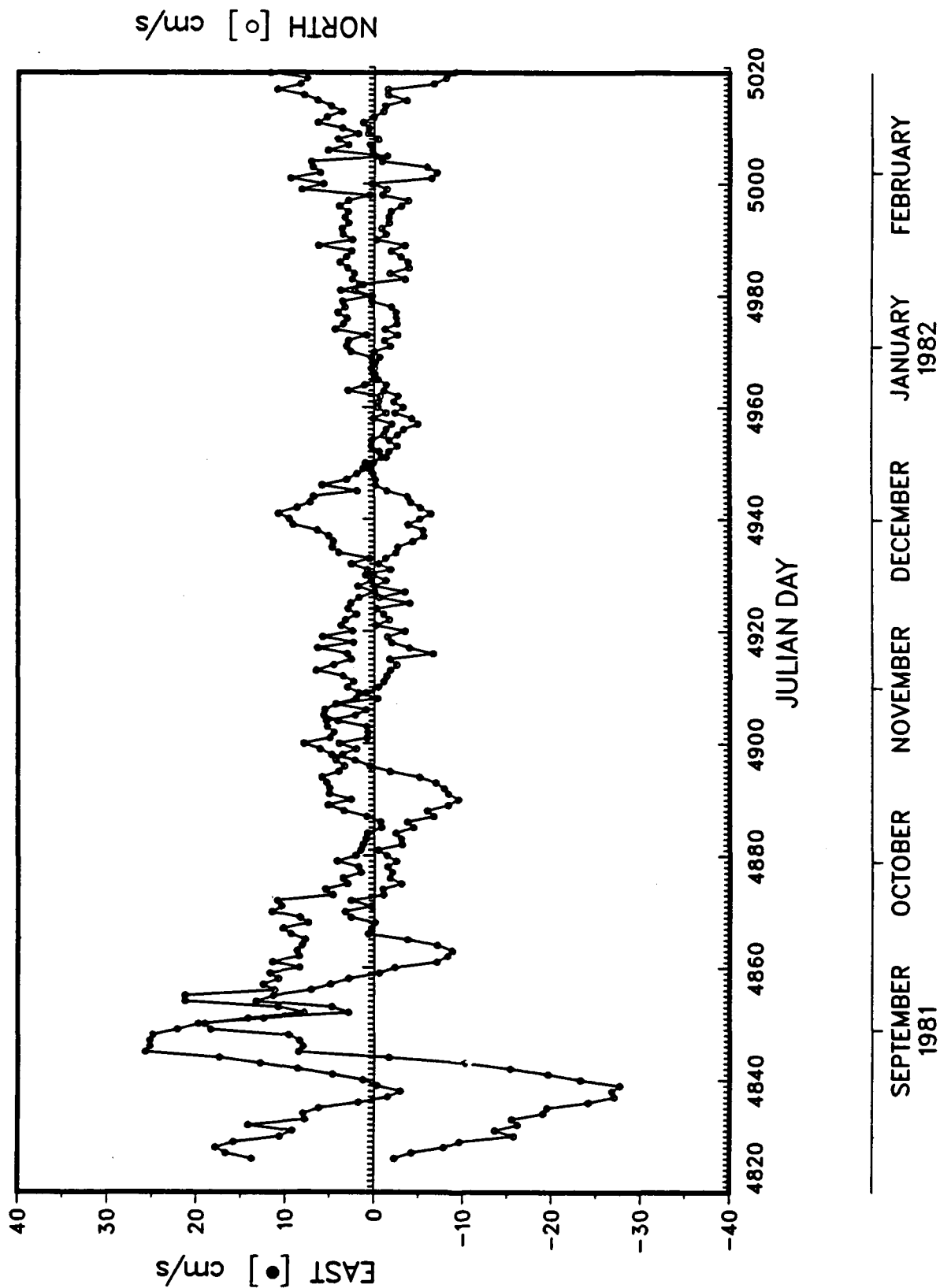
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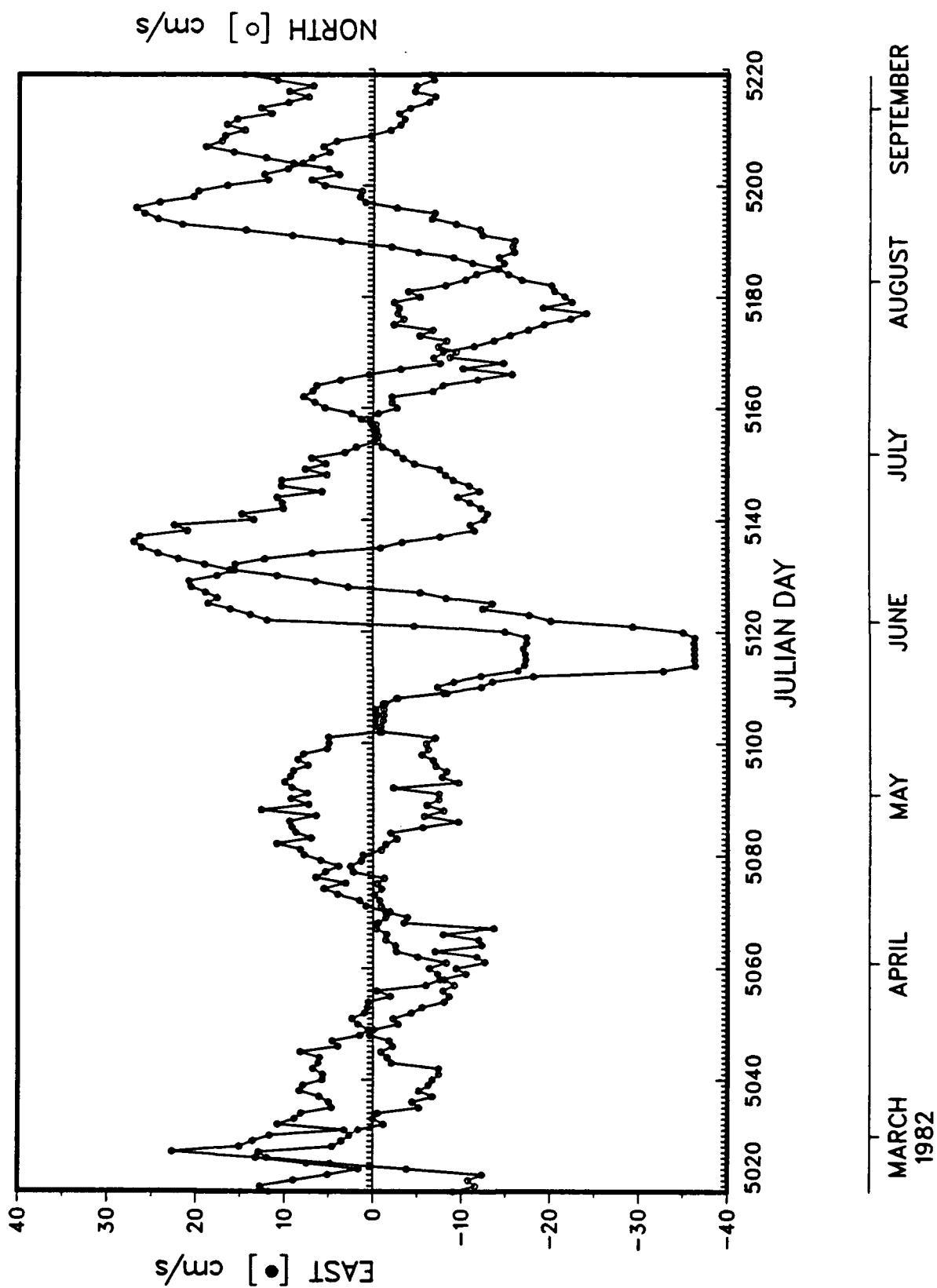


OCTOBER 1982 NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

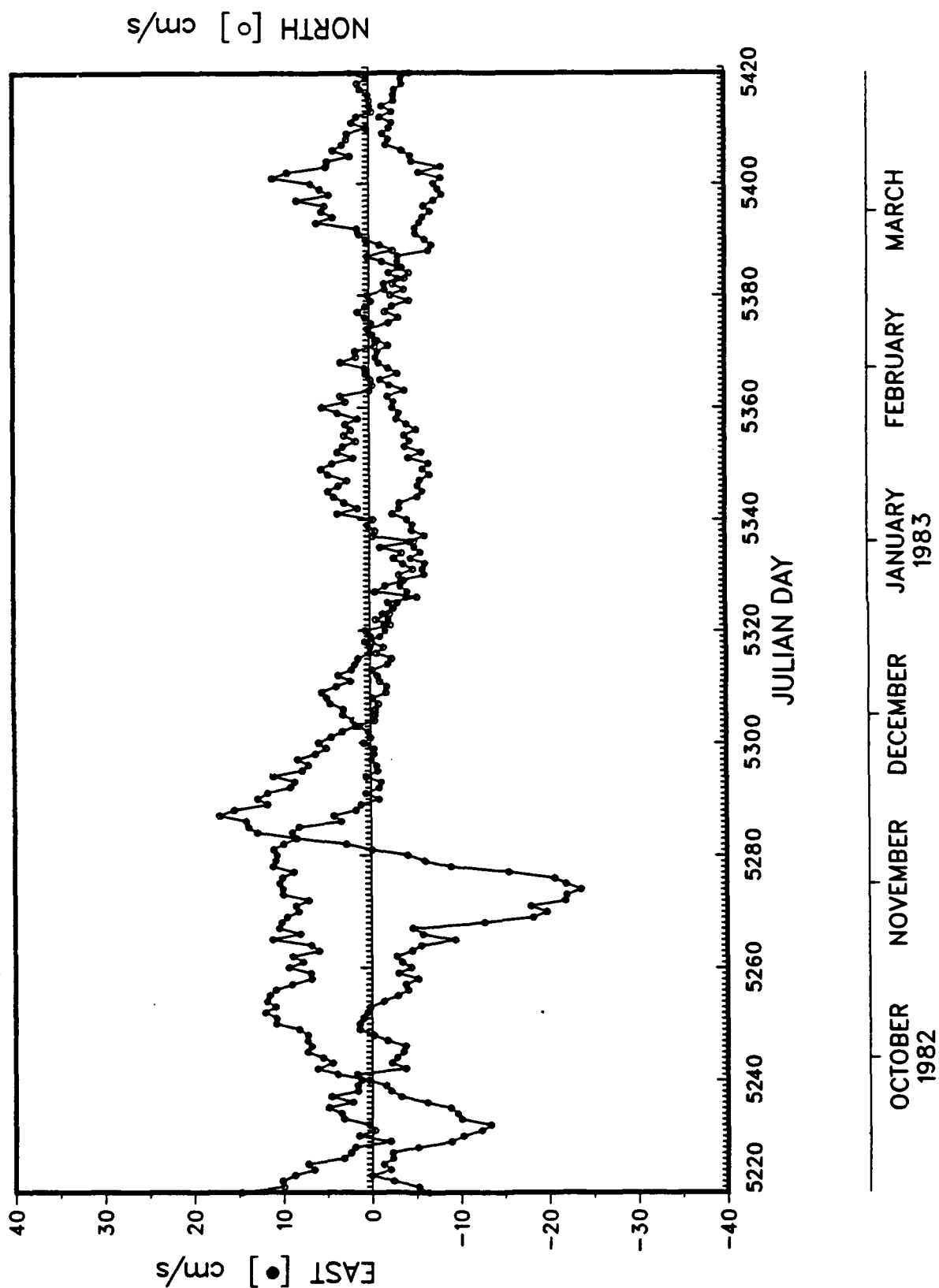


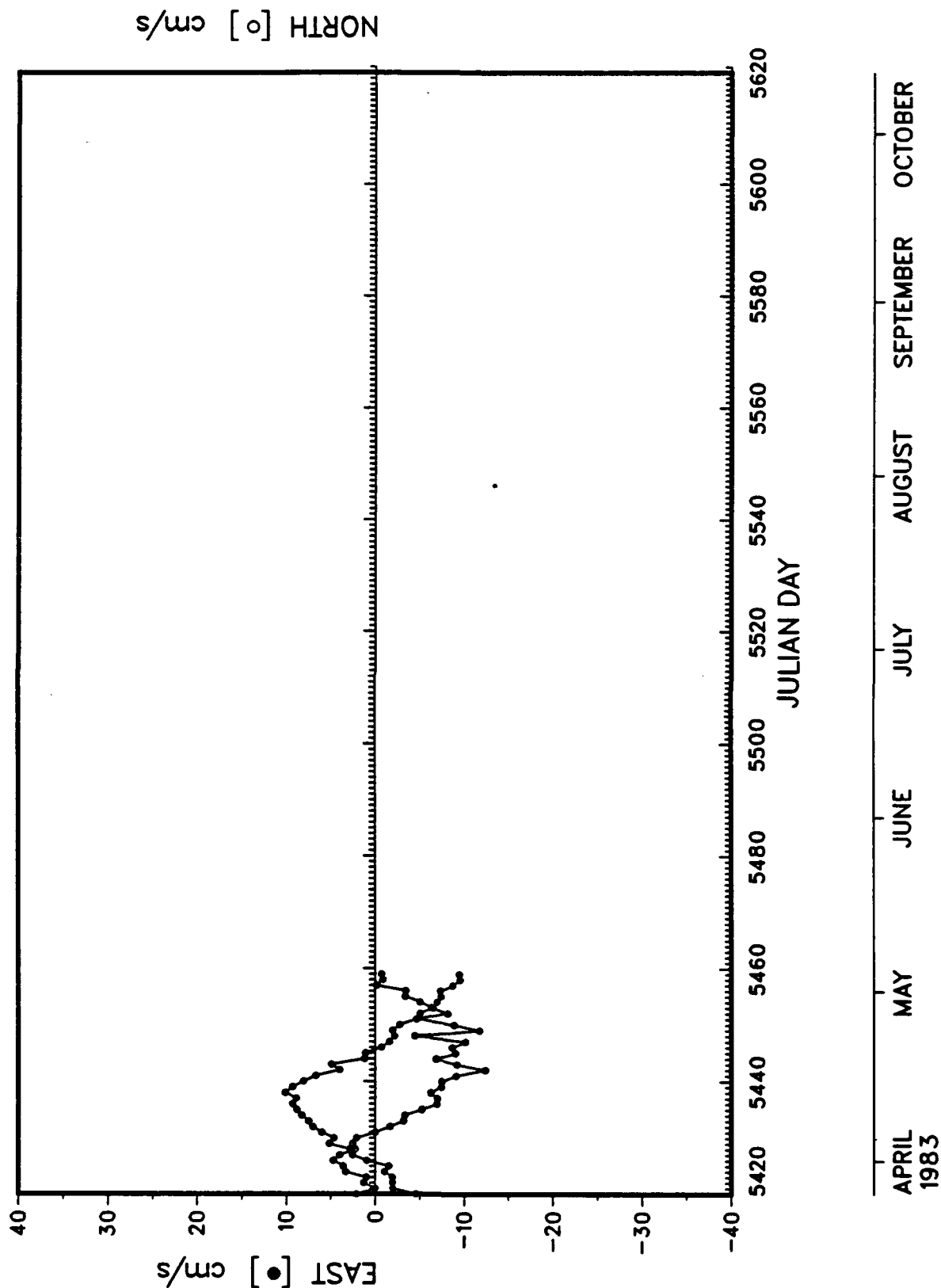
GUSREX 163A



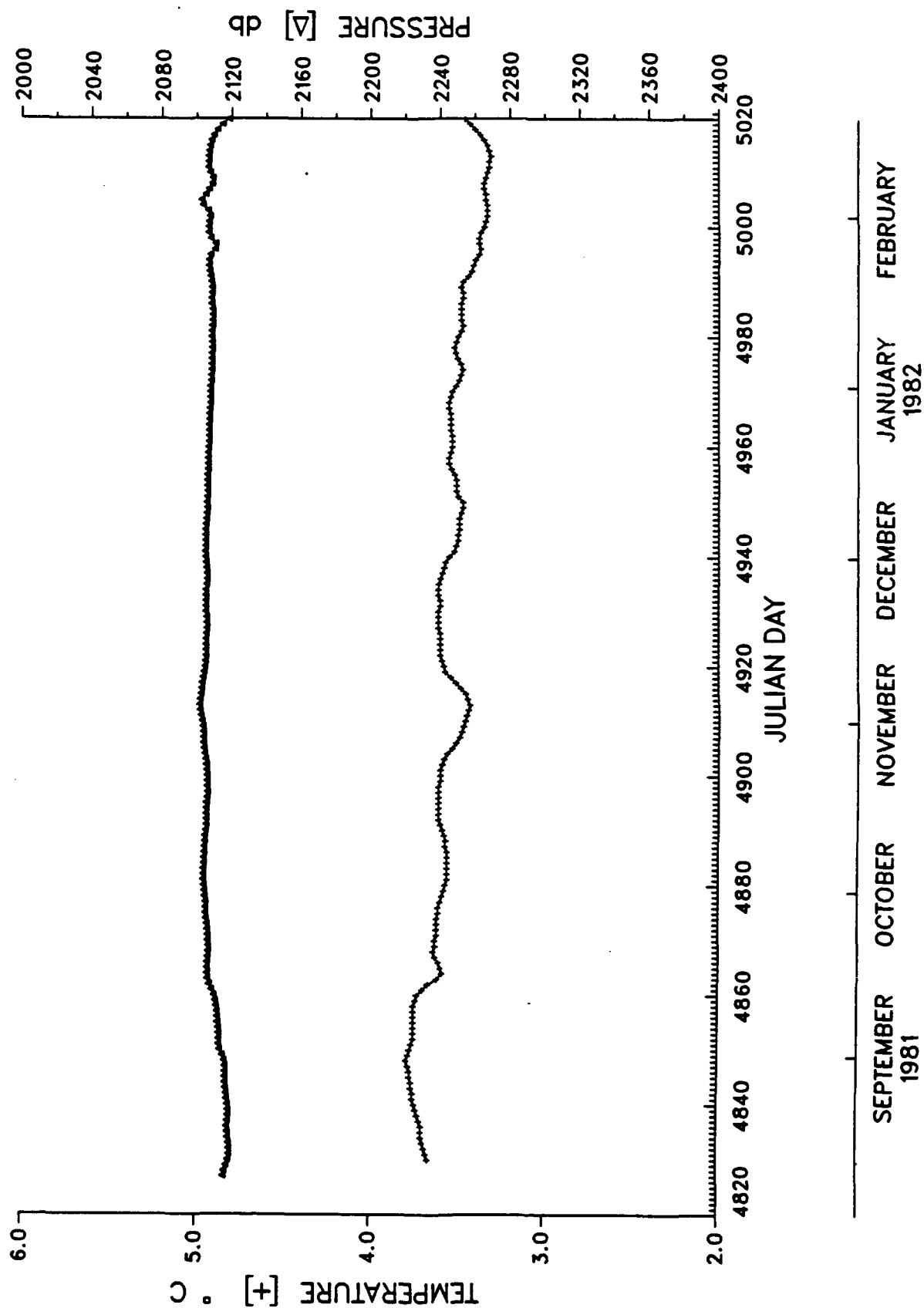


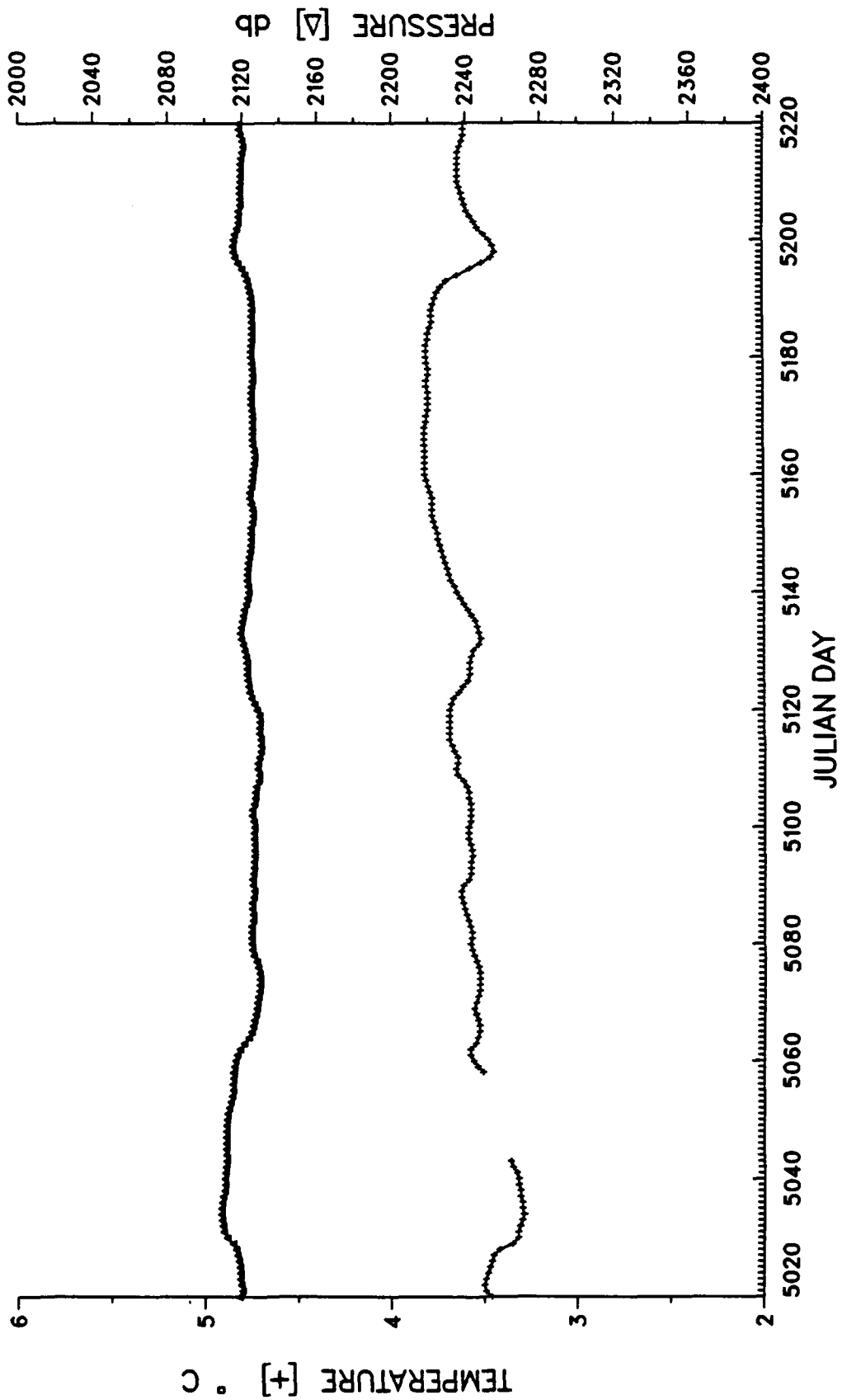
GUSREX 163A



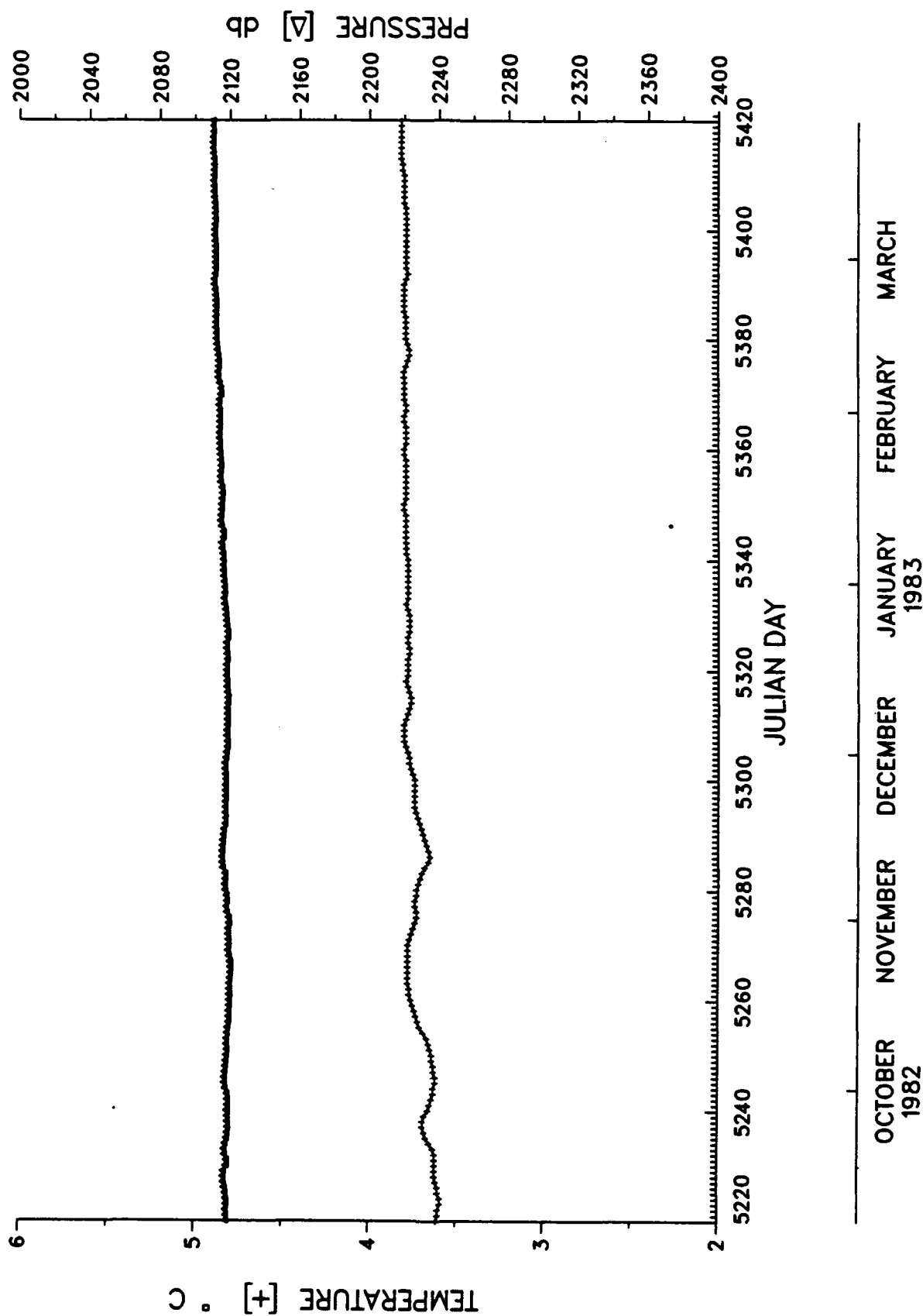


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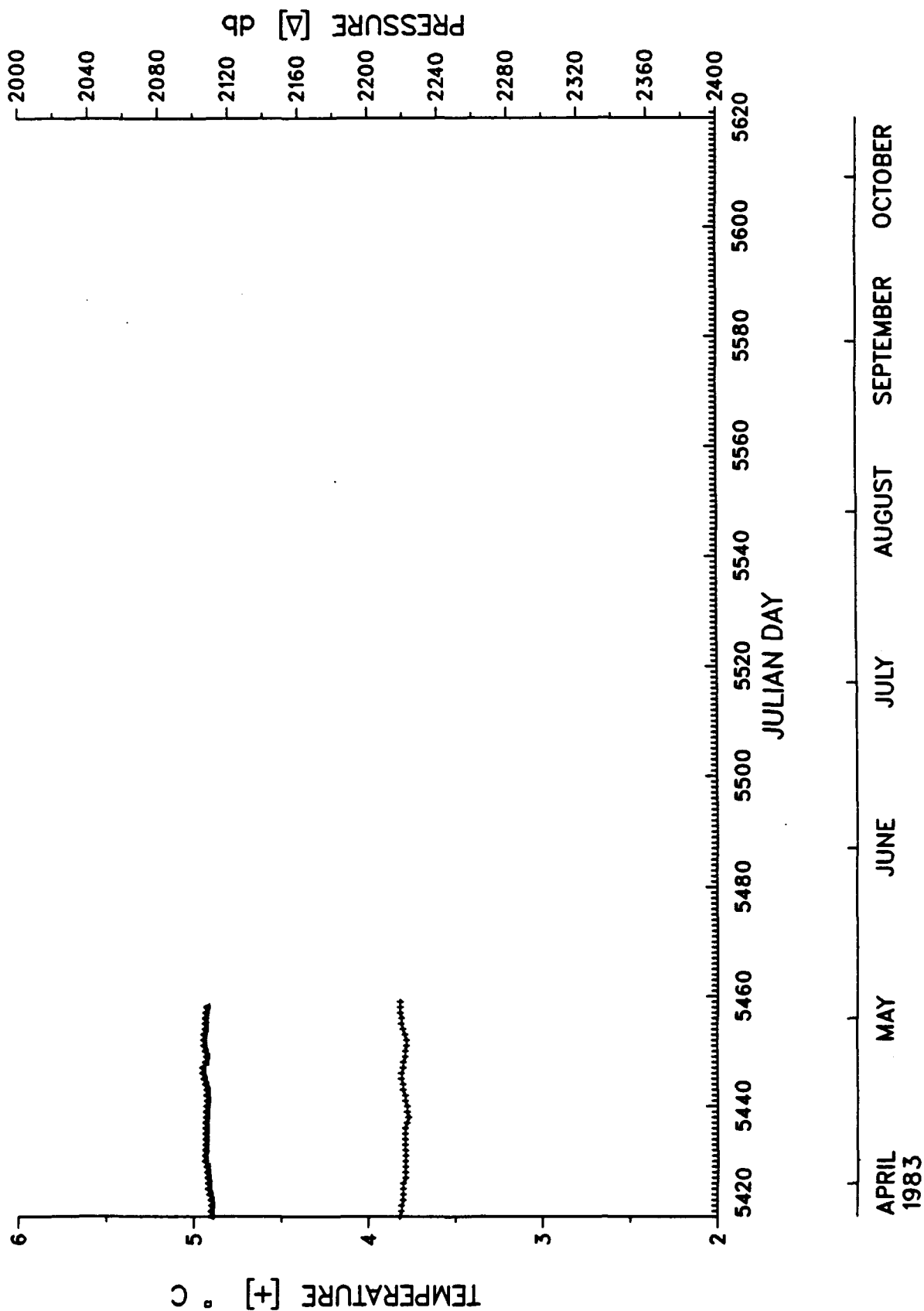




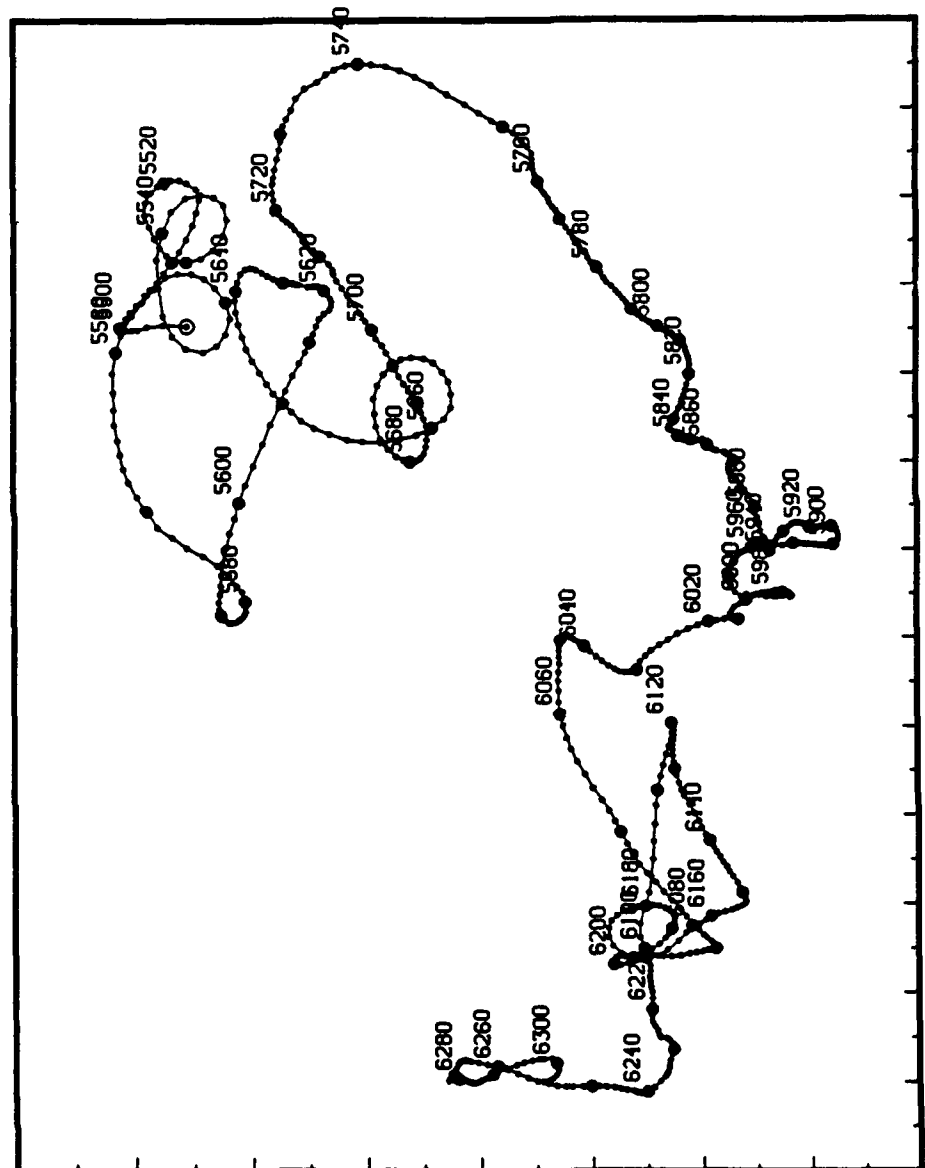
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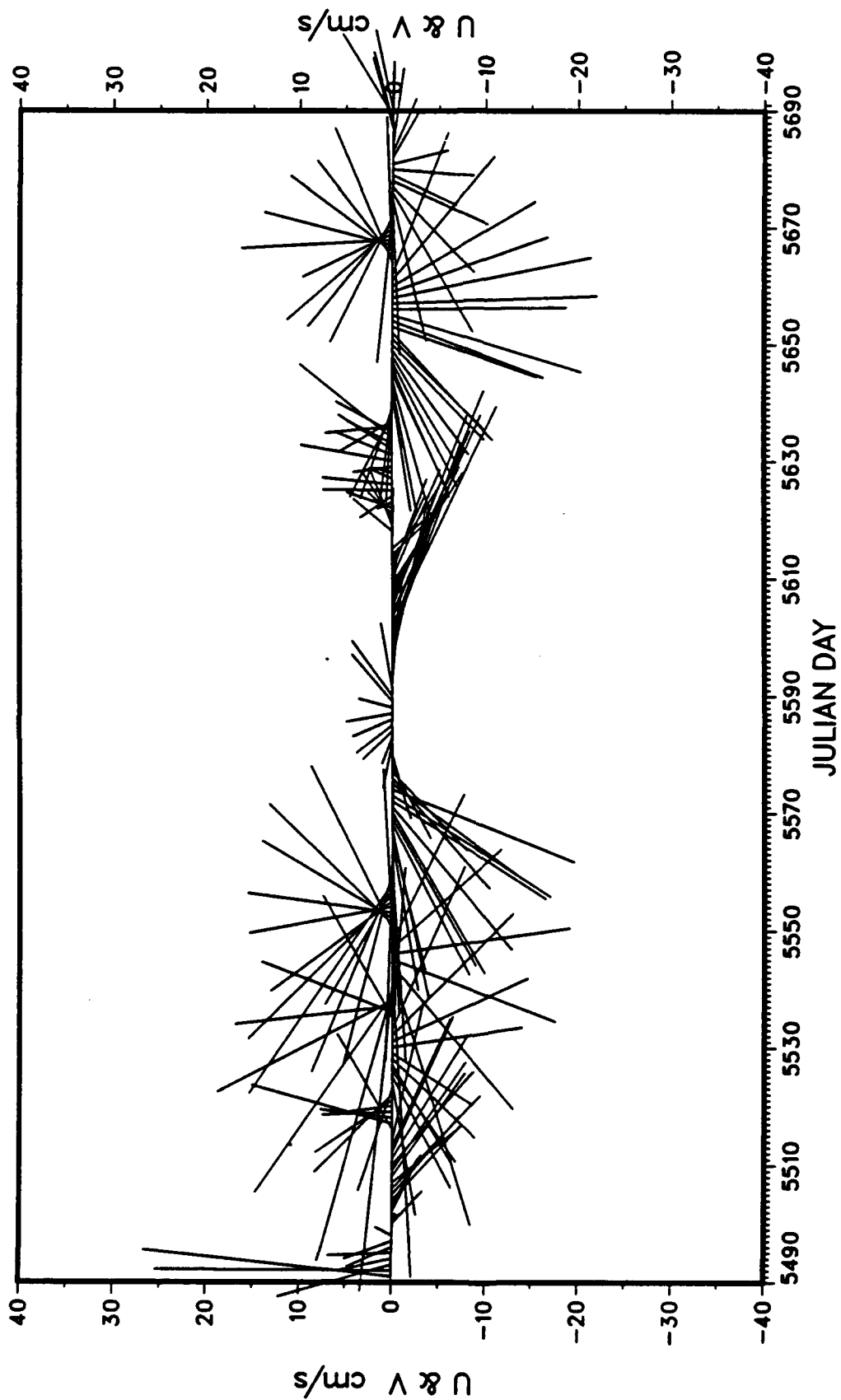


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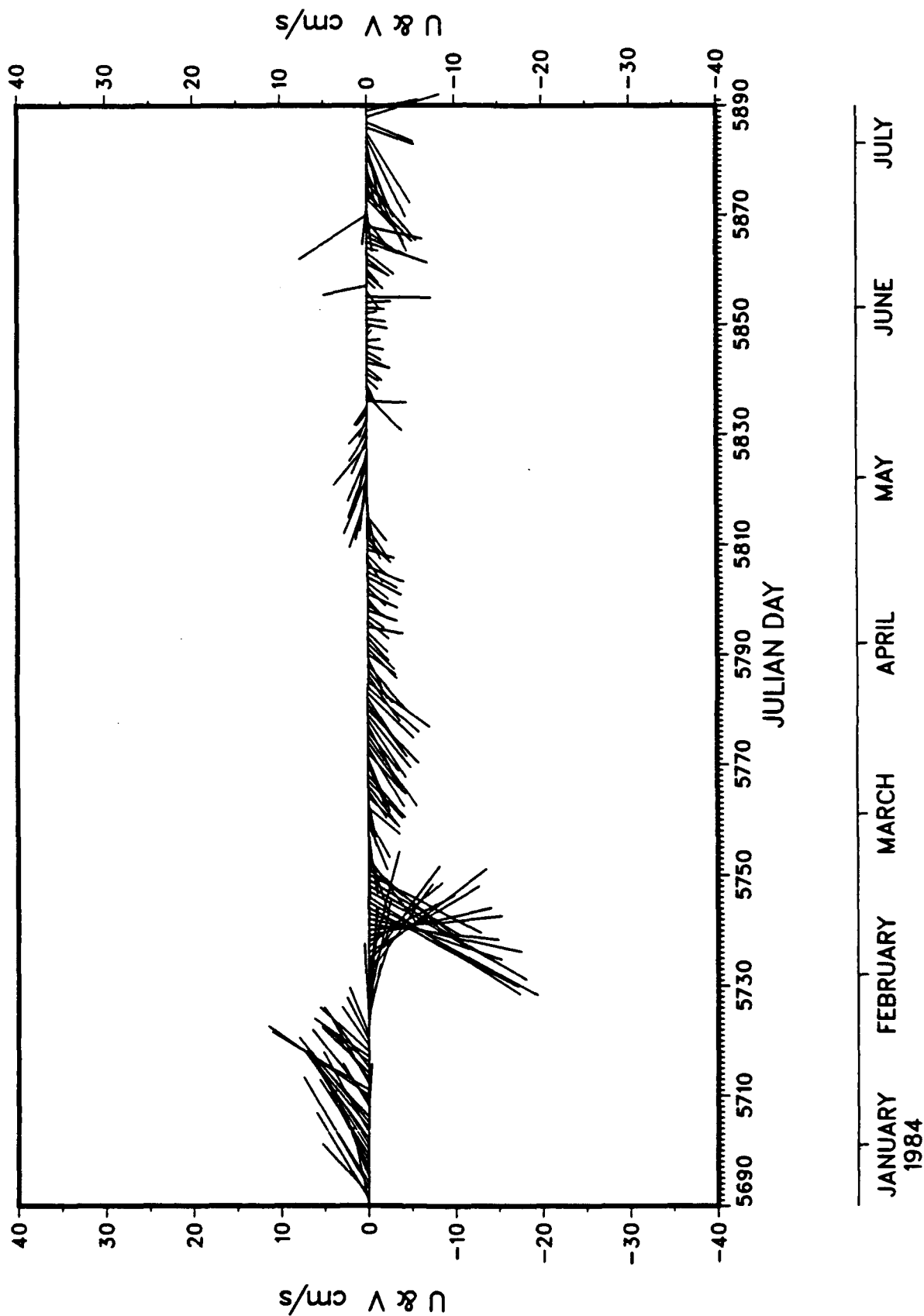
163B

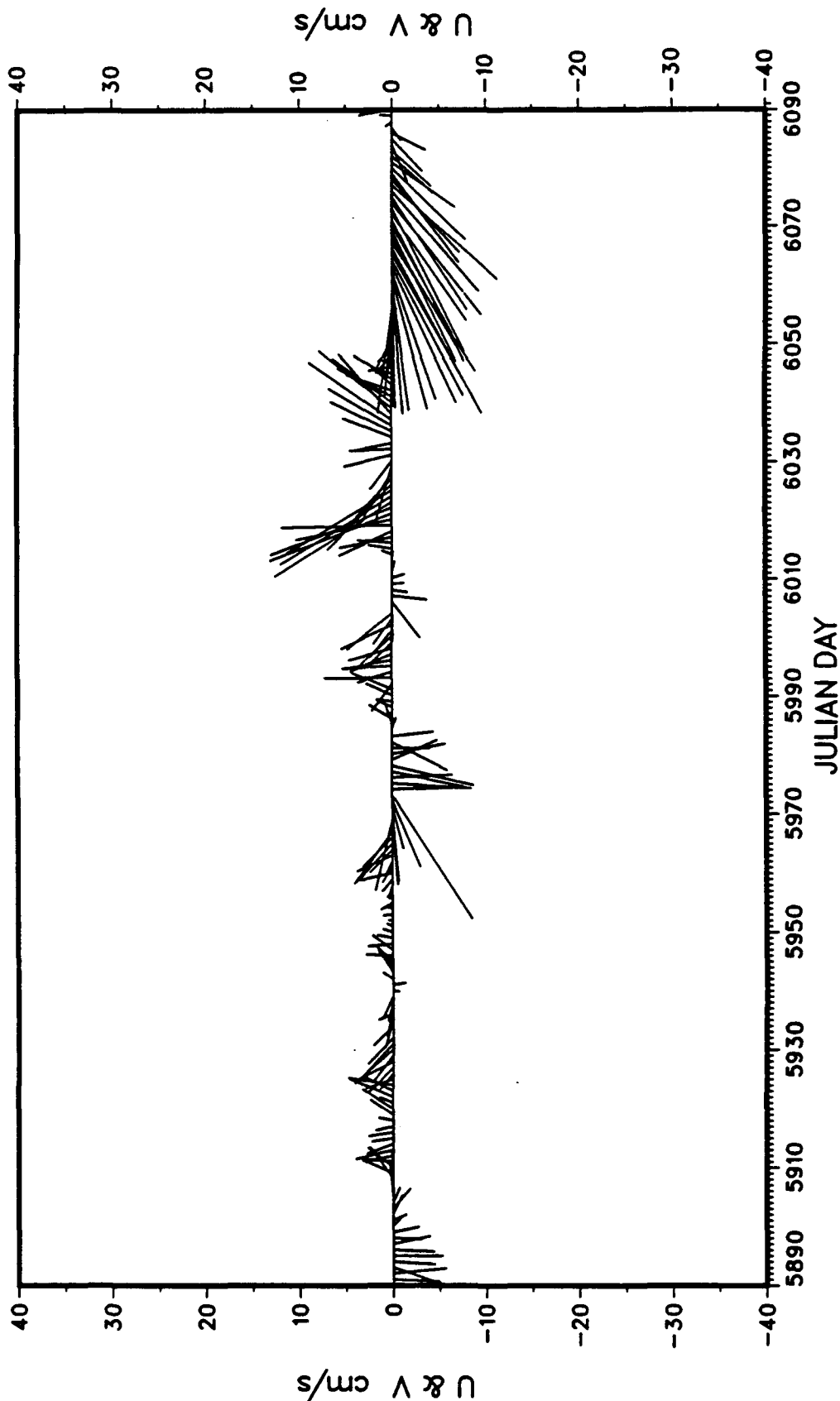




JULY 1983 AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

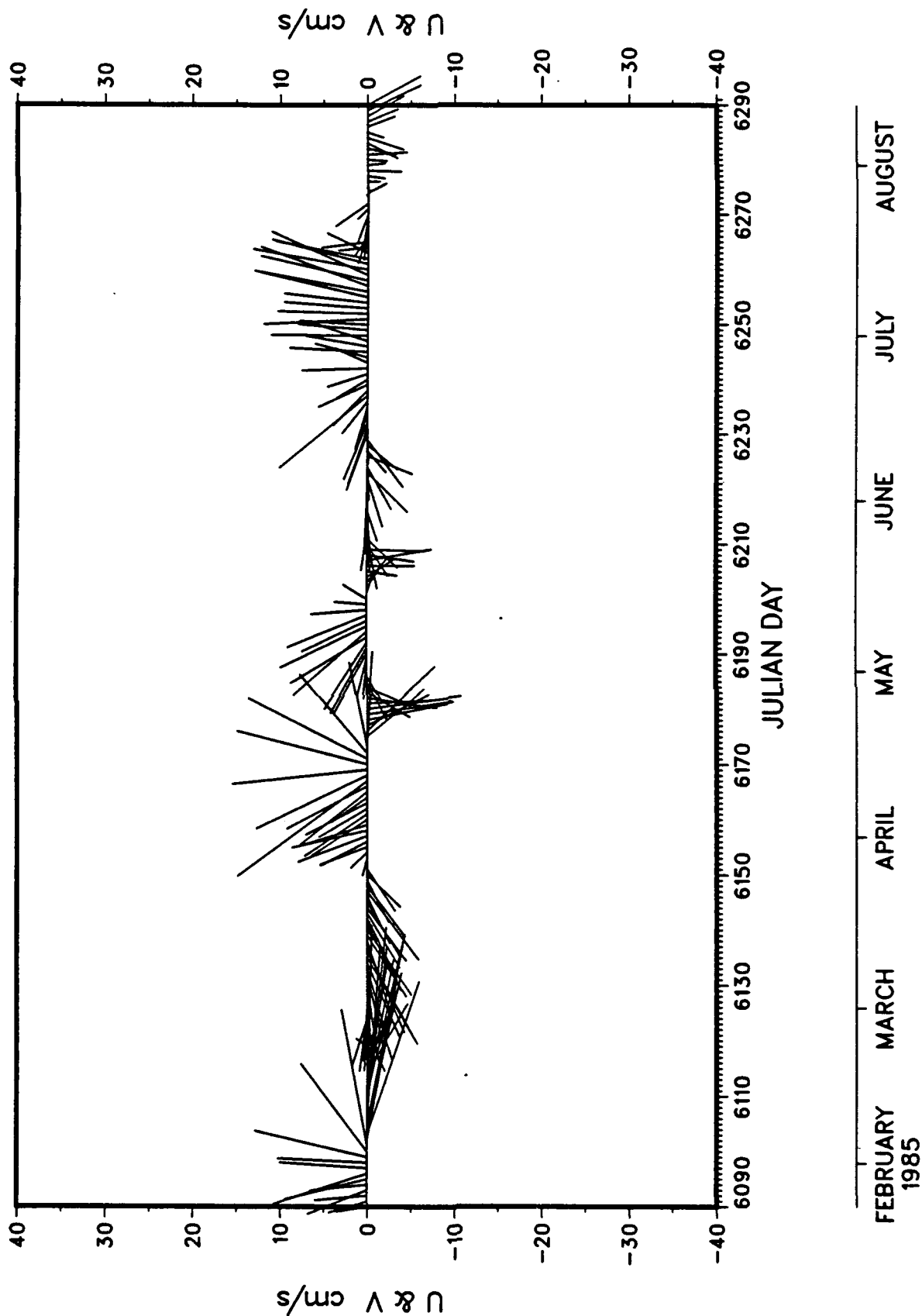
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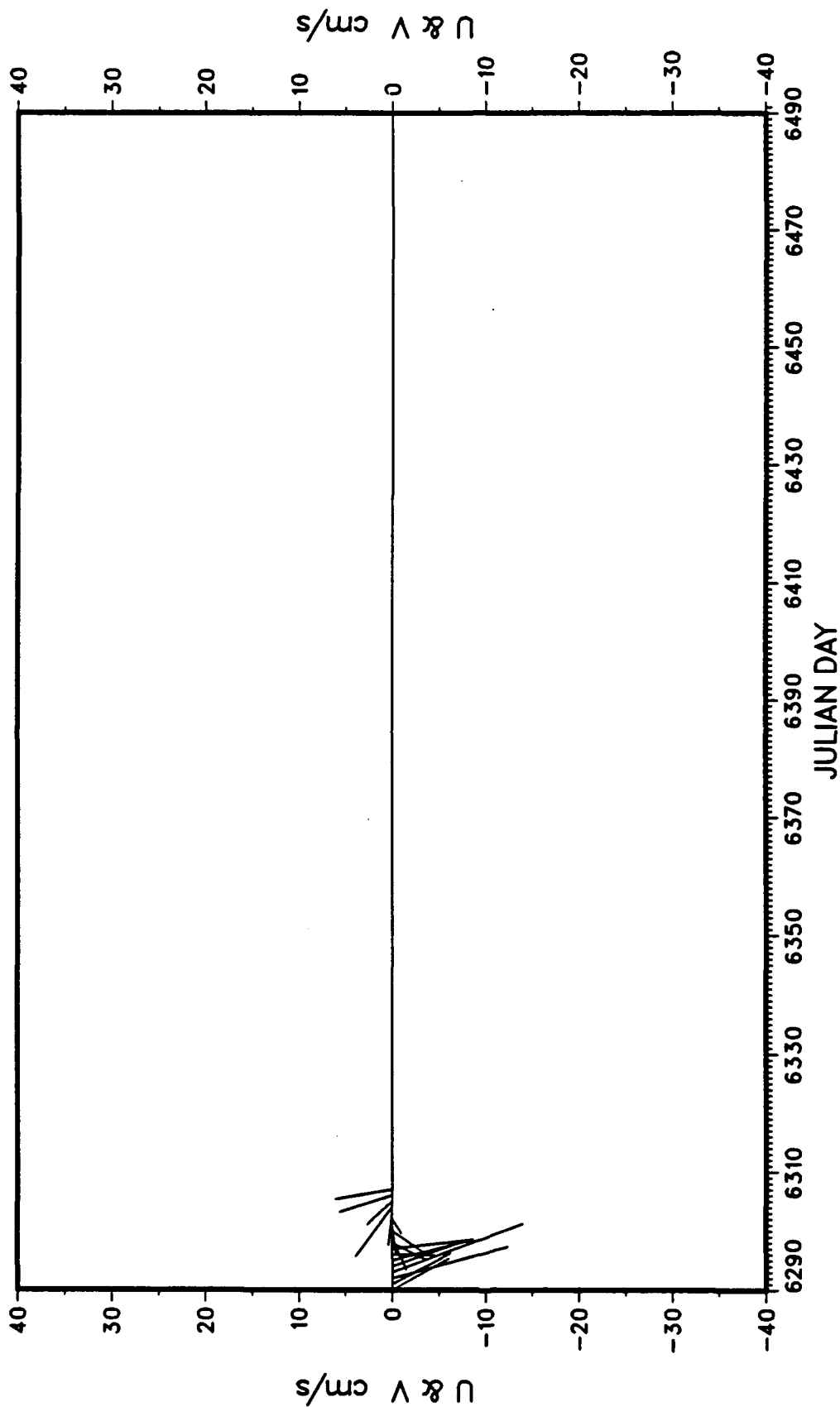




AUGUST 1984 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1985

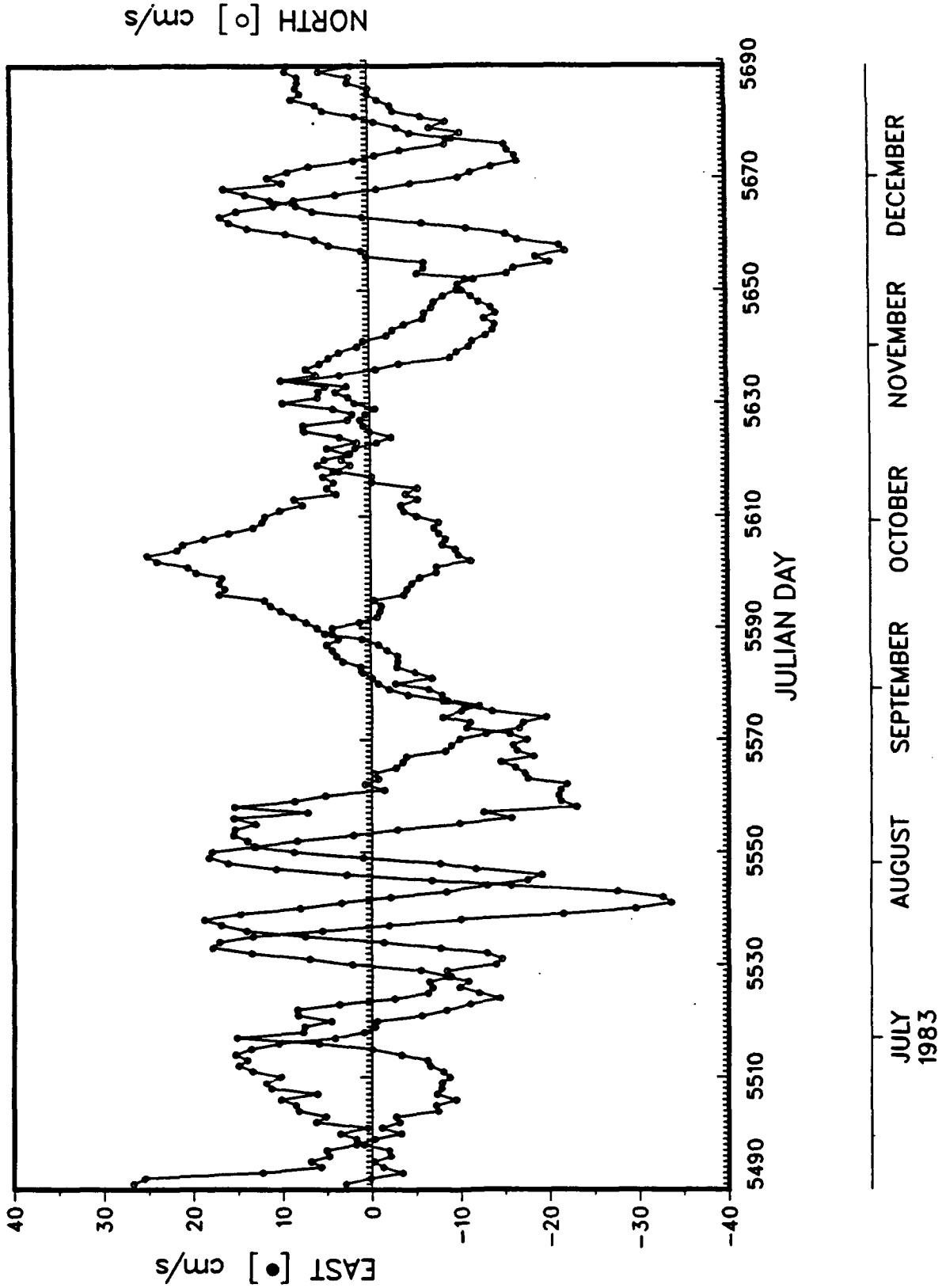
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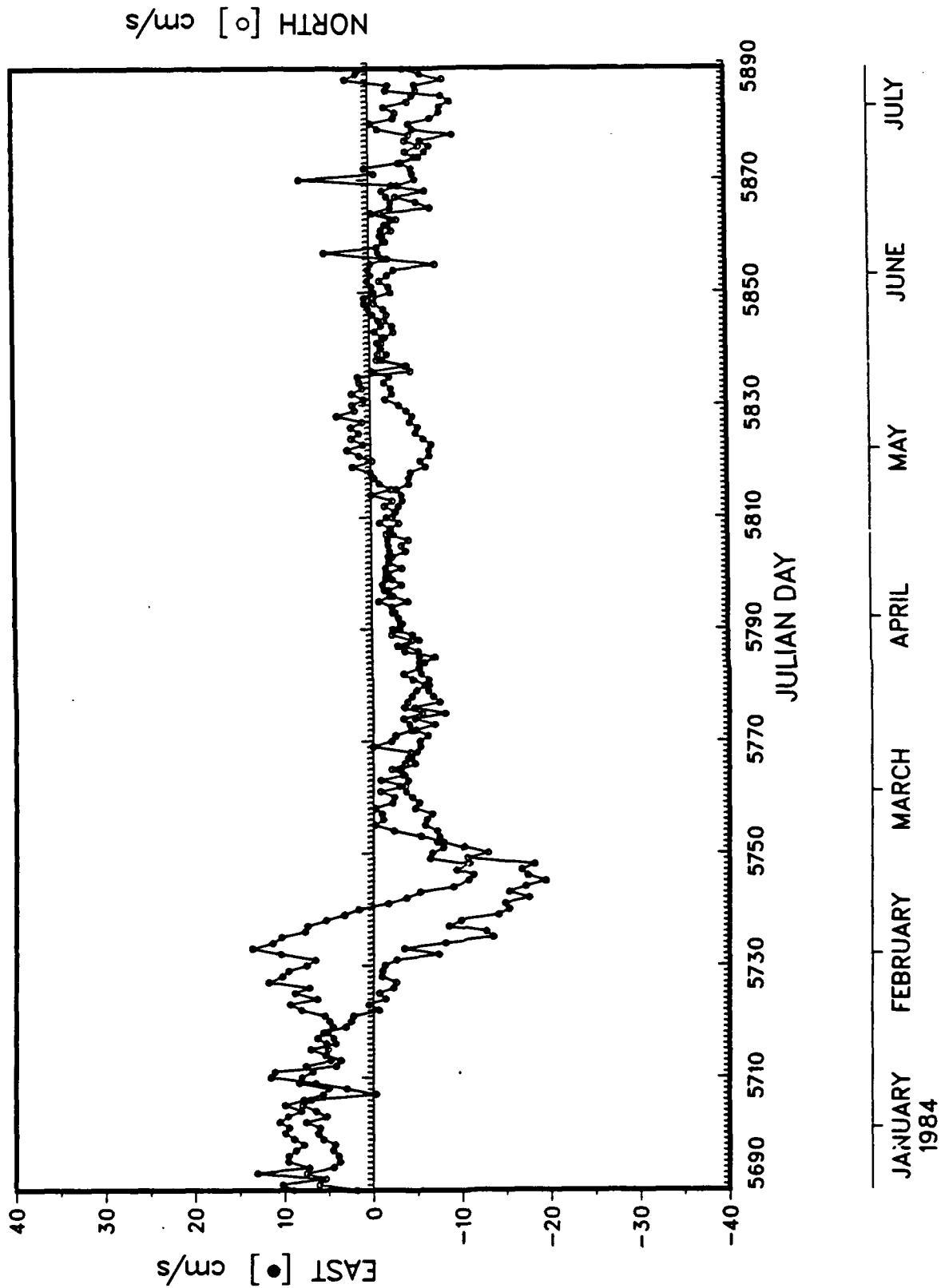




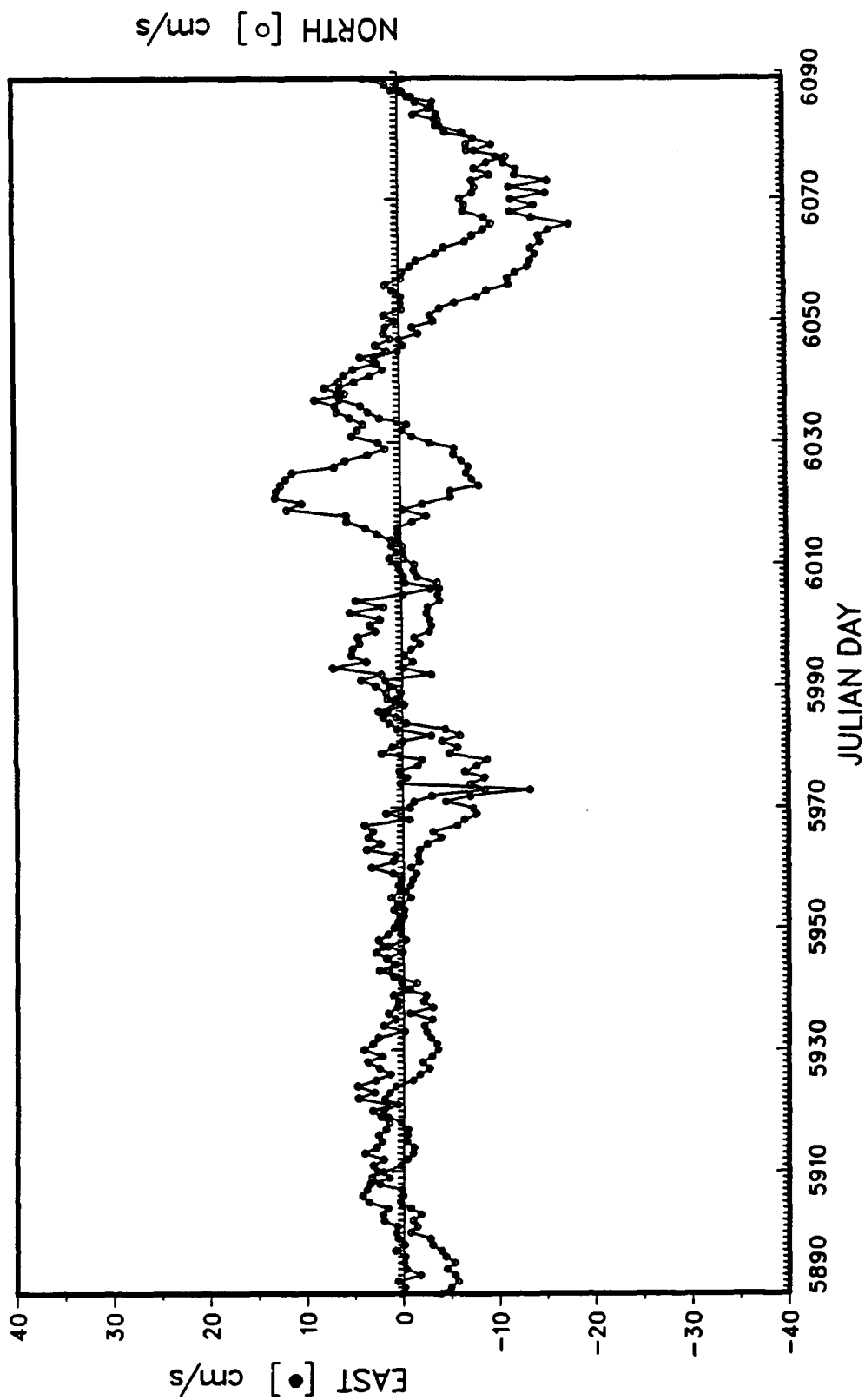
SEPTEMBER 1985 OCTOBER NOVEMBER DECEMBER JANUARY 1986 FEBRUARY

GUSREX 163B

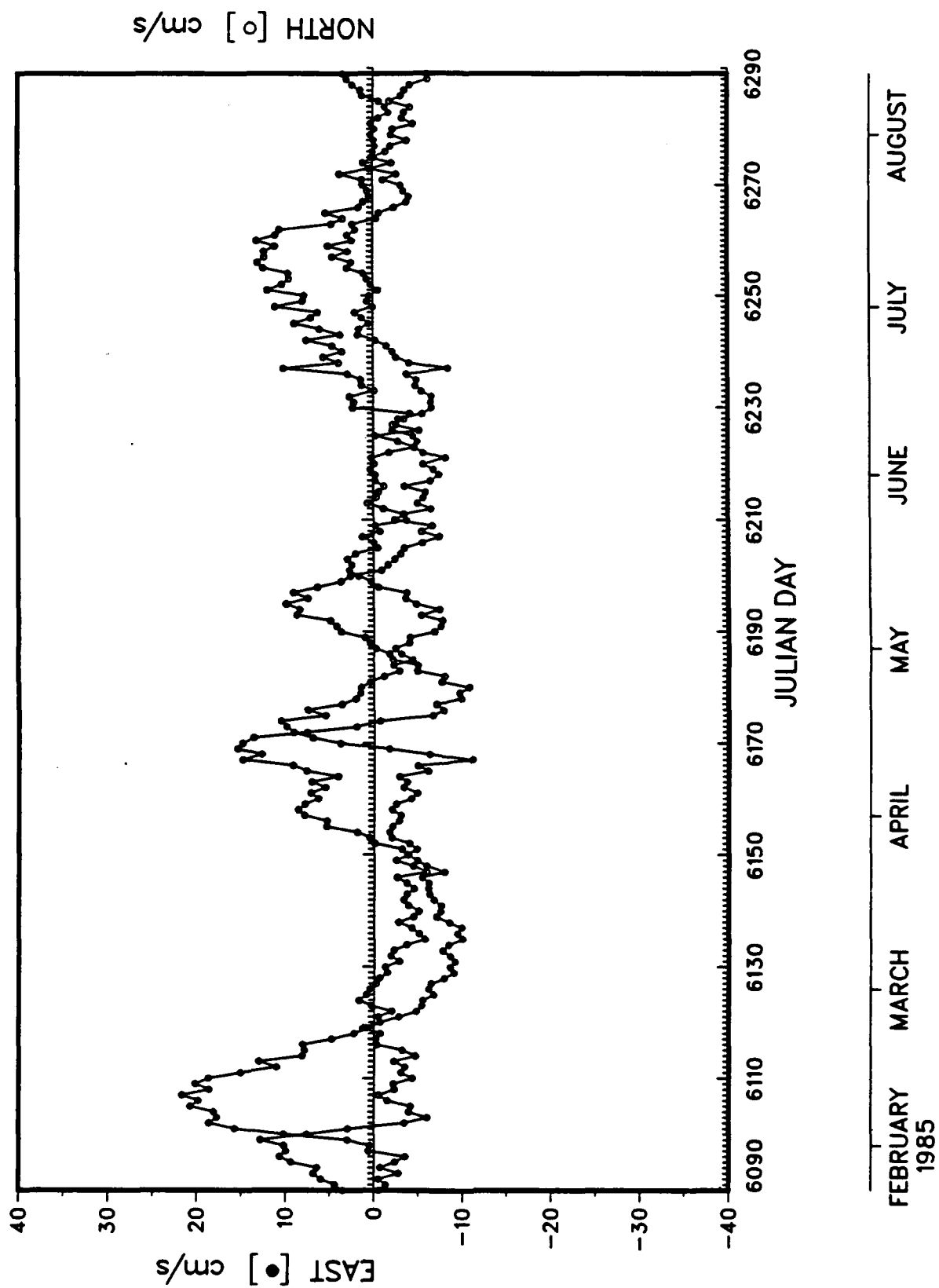




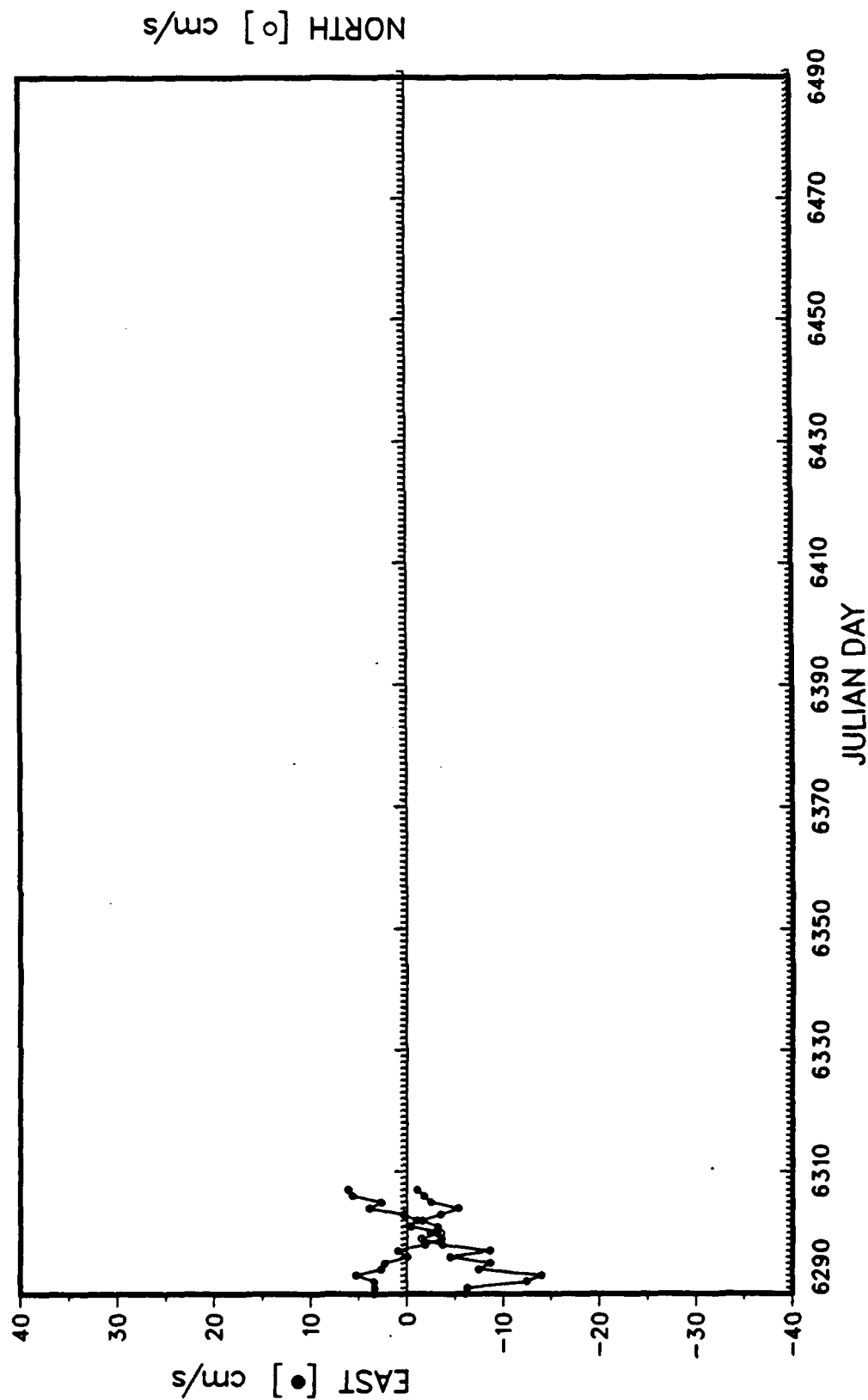
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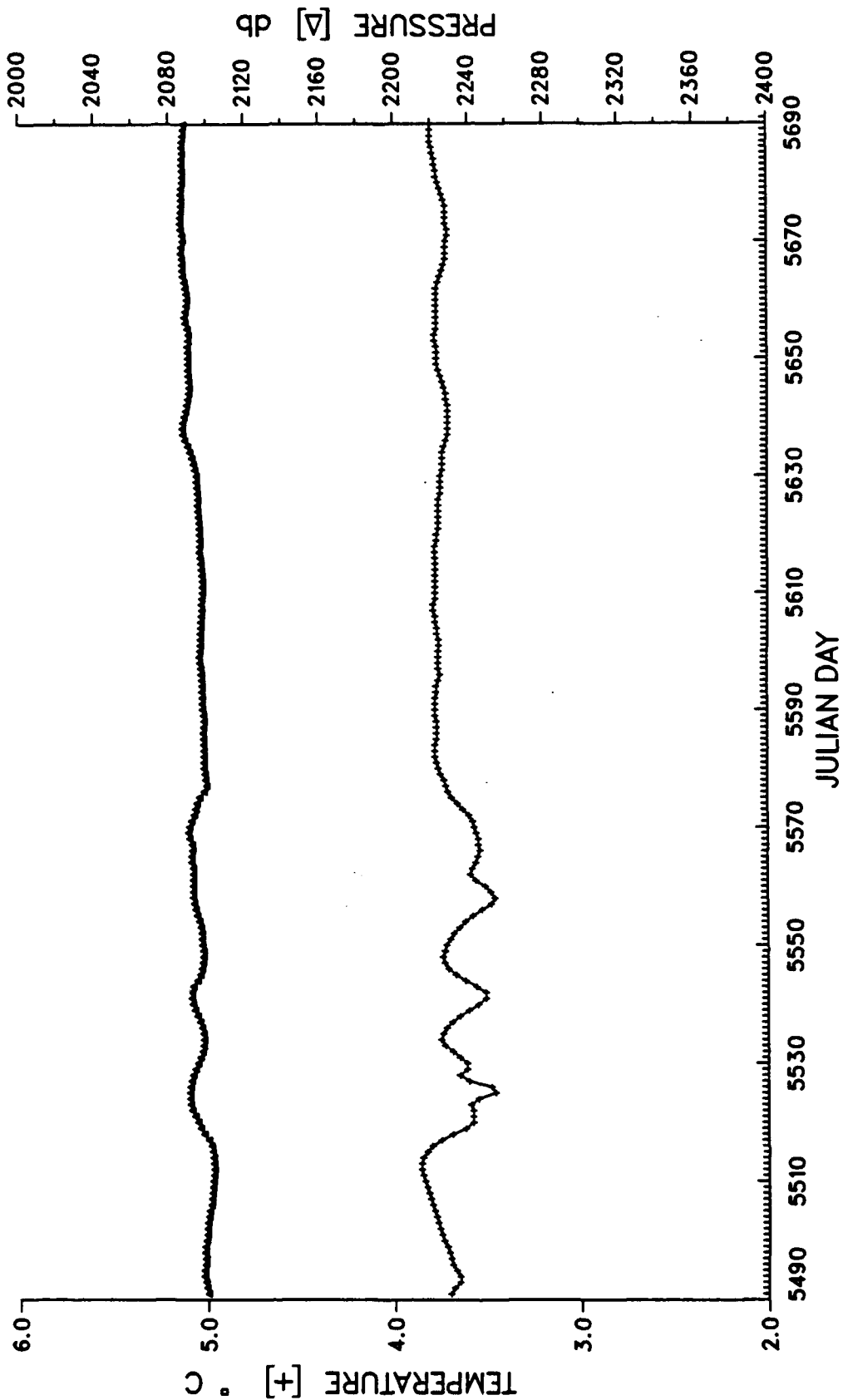
AUGUST 1984 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1985



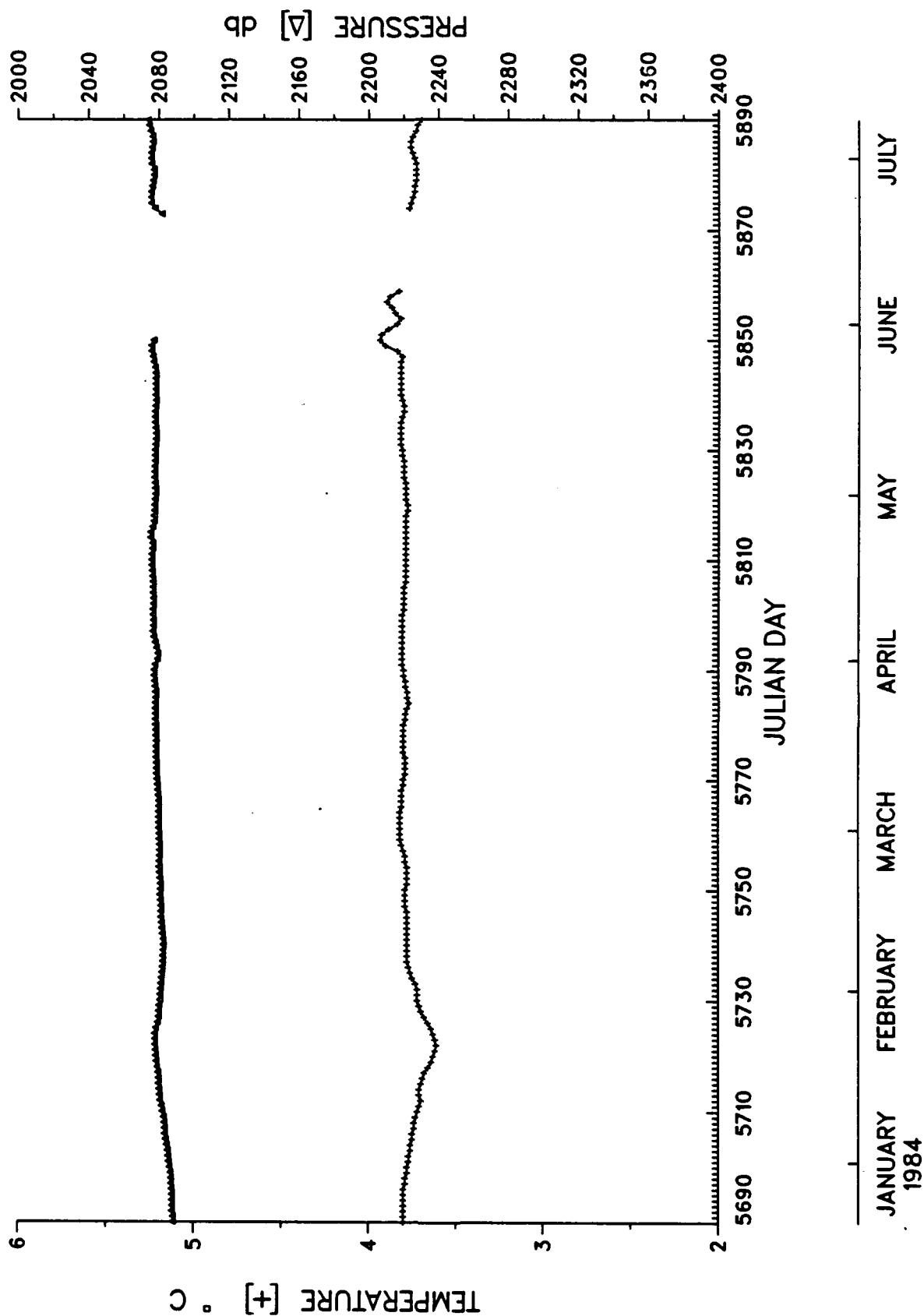
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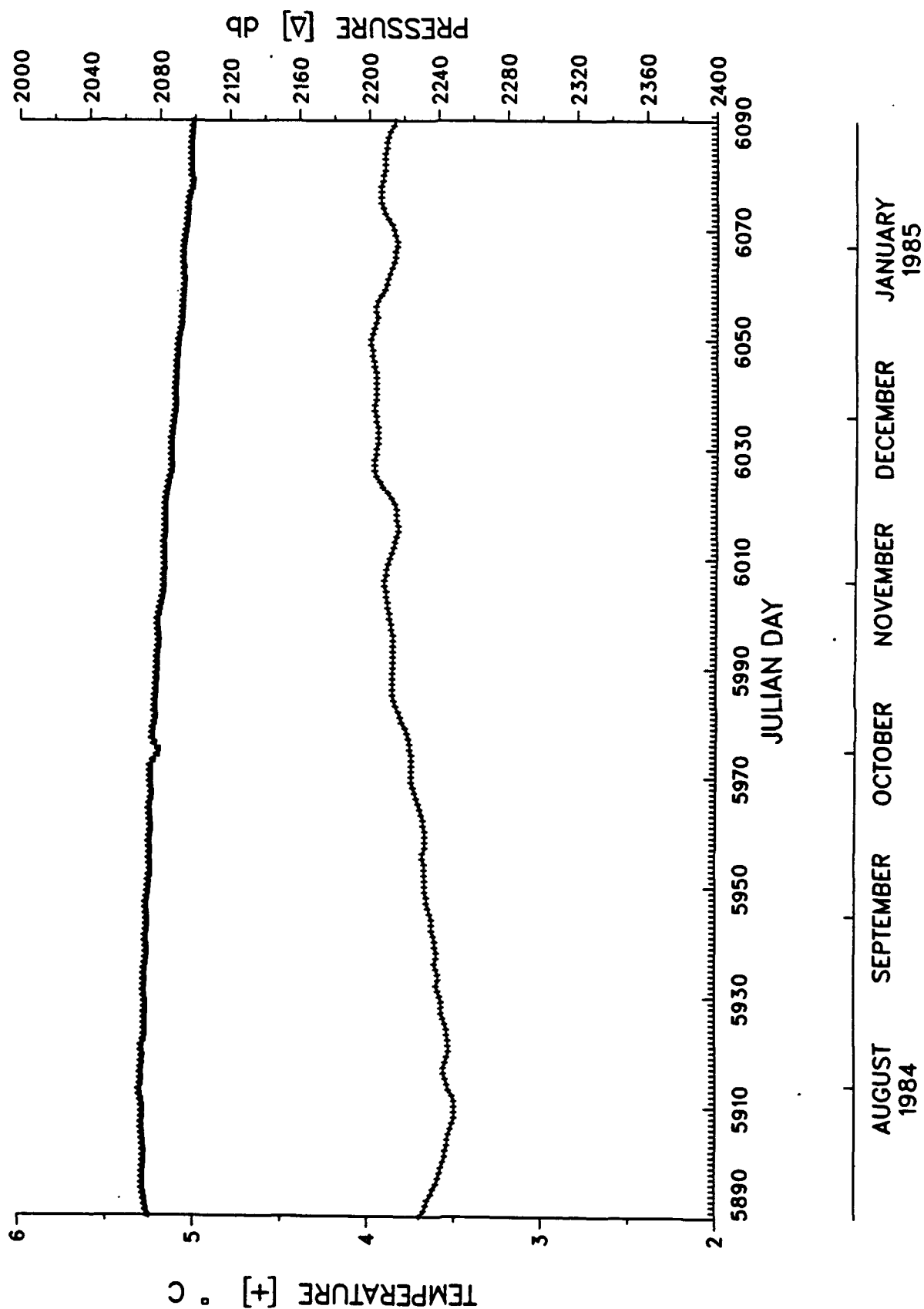
SEPTEMBER 1985 OCTOBER NOVEMBER DECEMBER JANUARY 1986 FEBRUARY



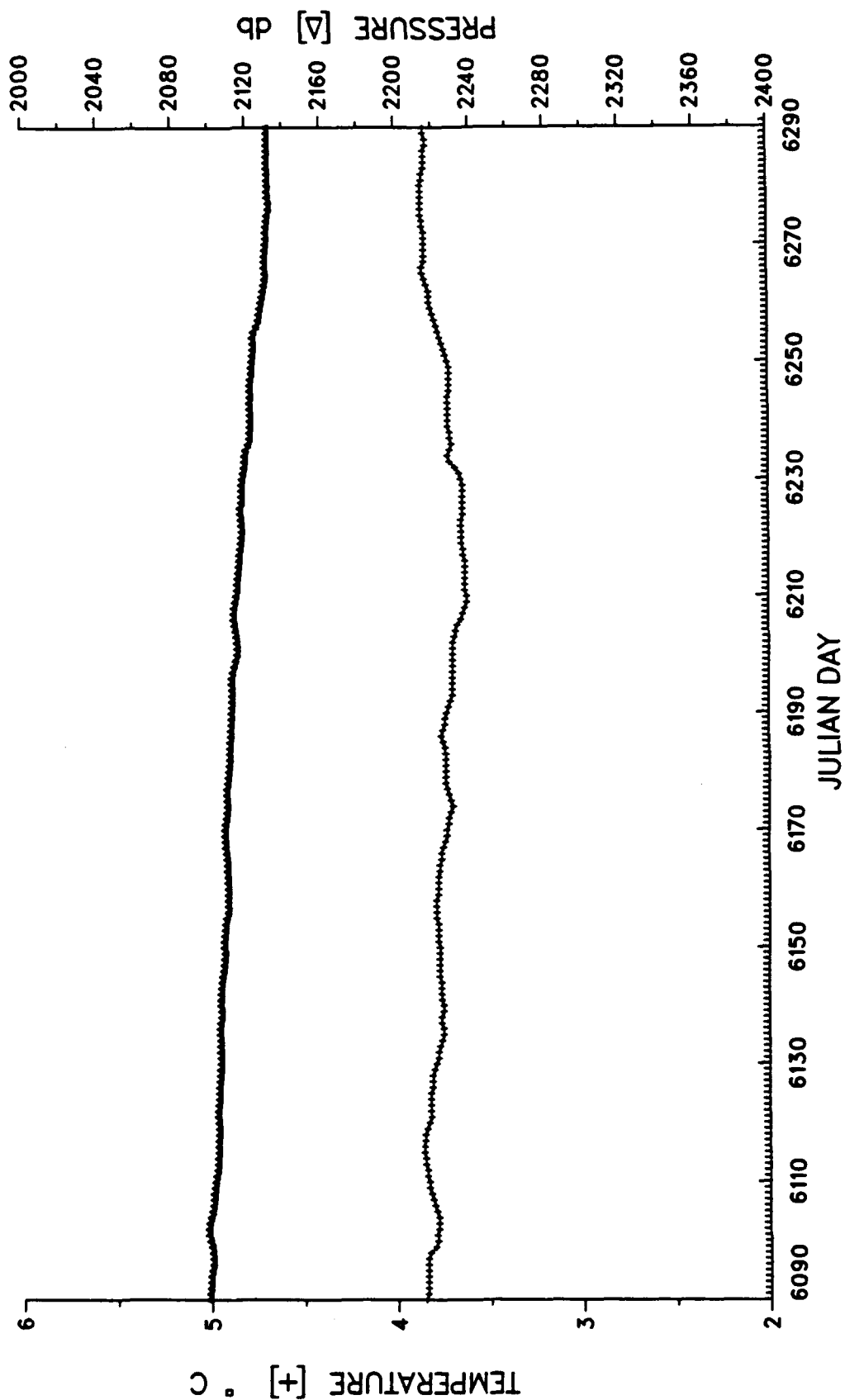
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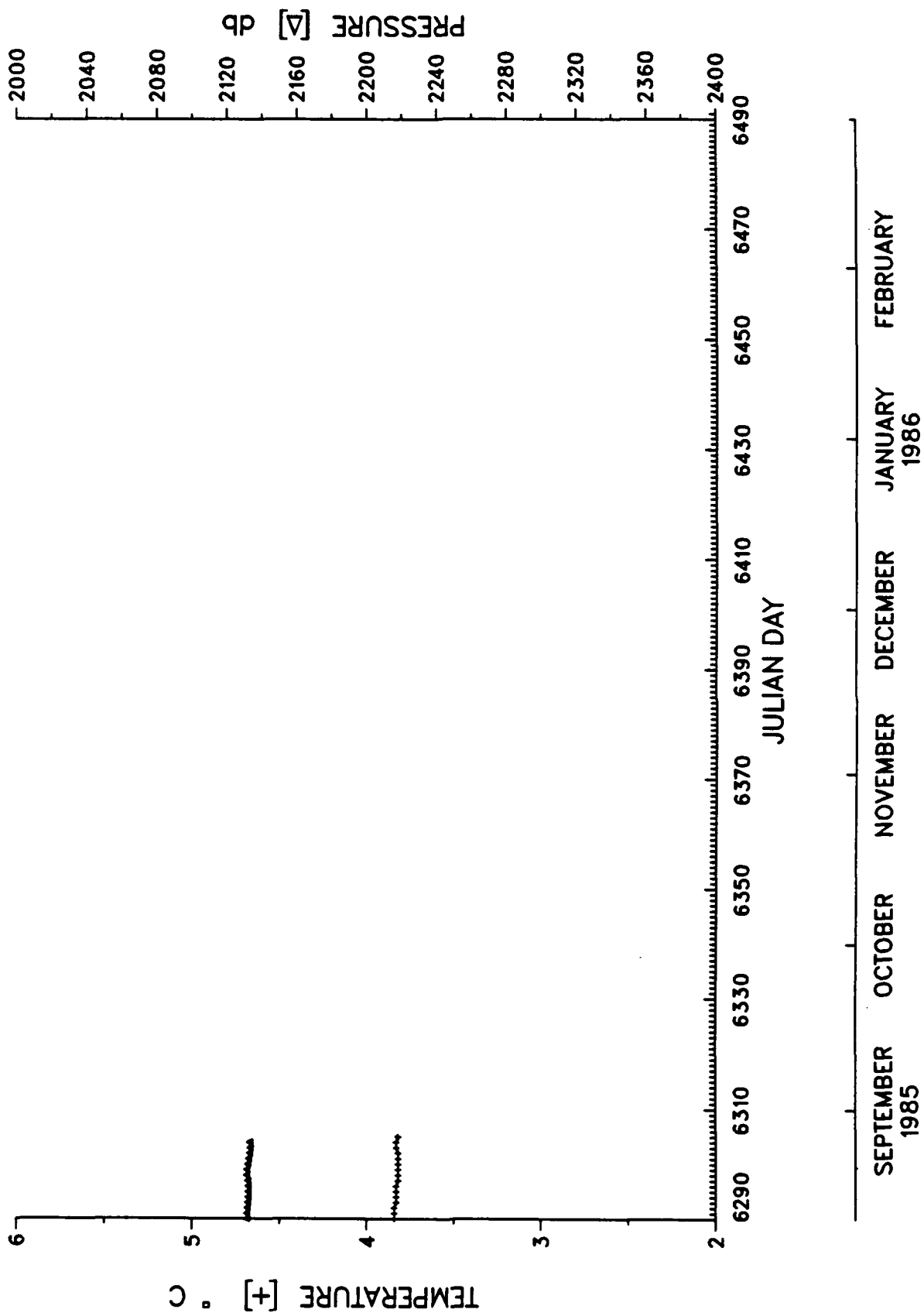


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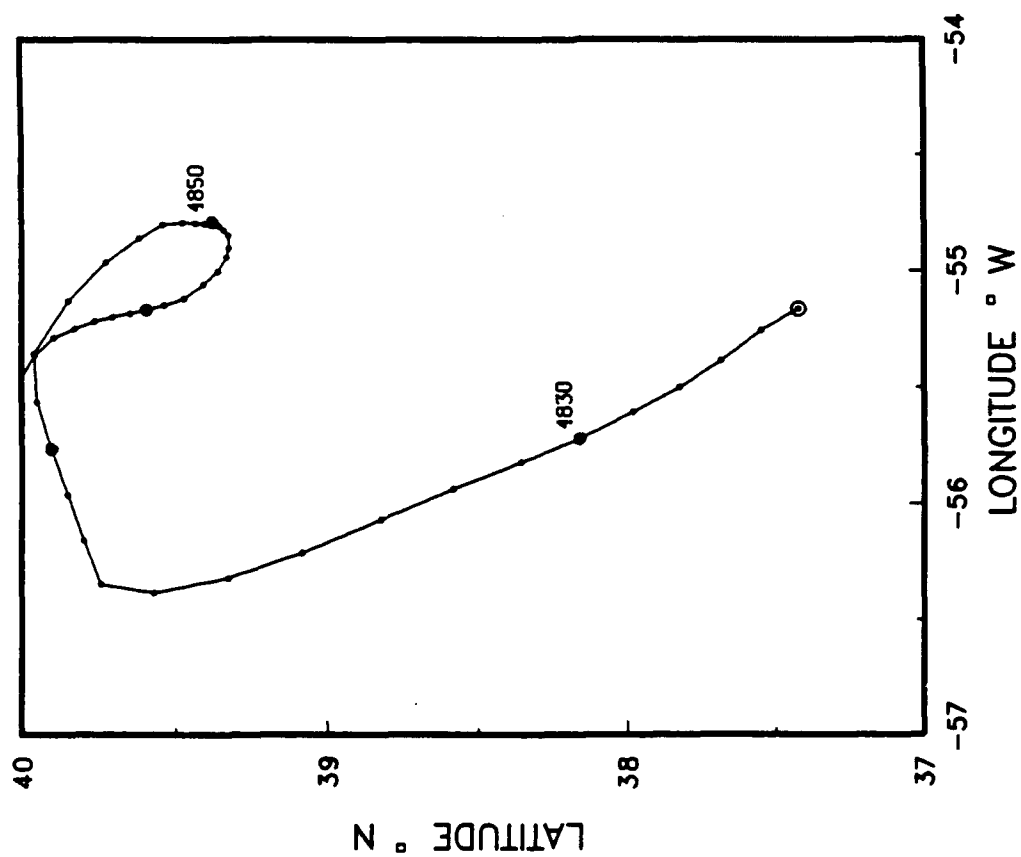


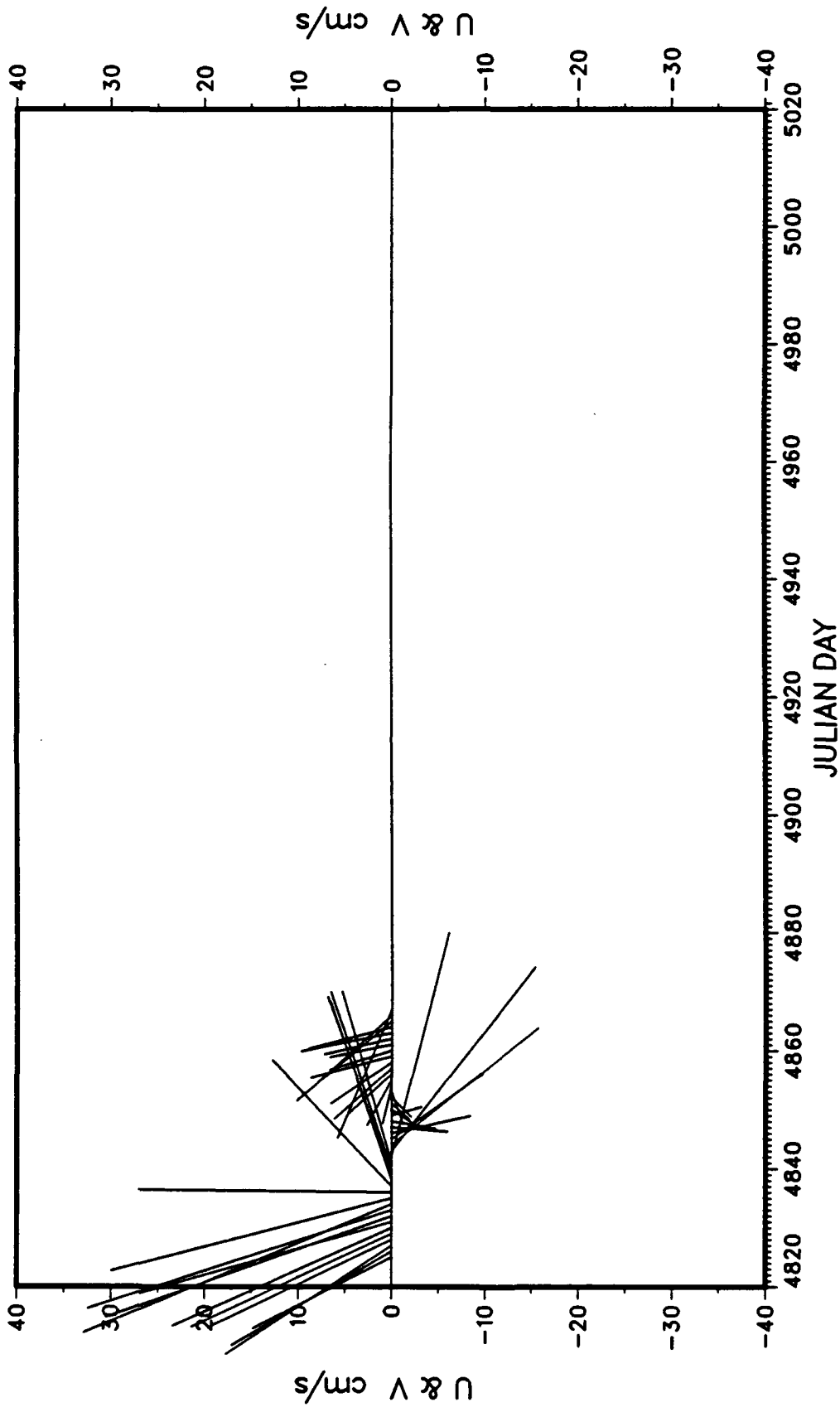
GUSREX 163B





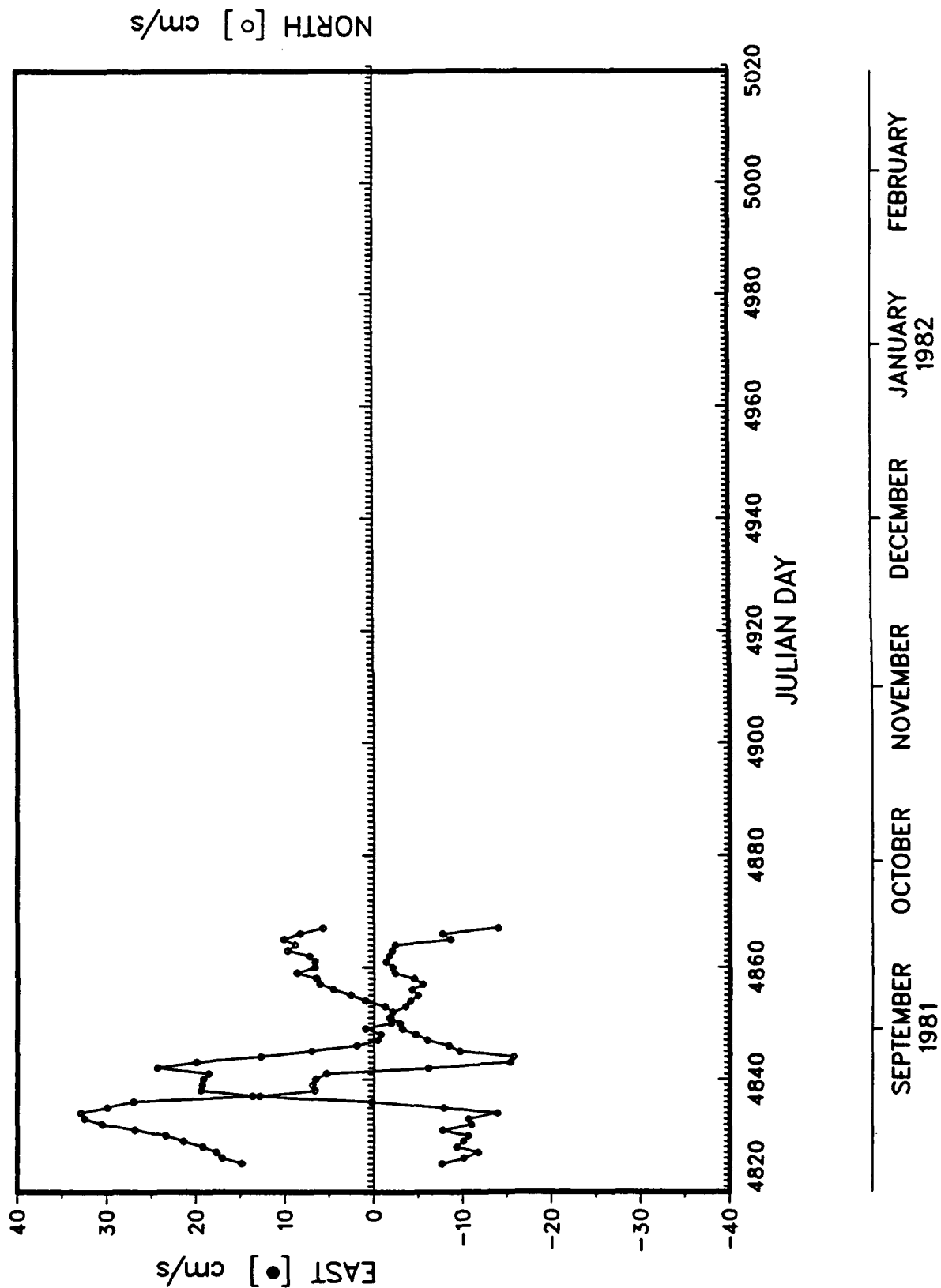
GUSREX 165A

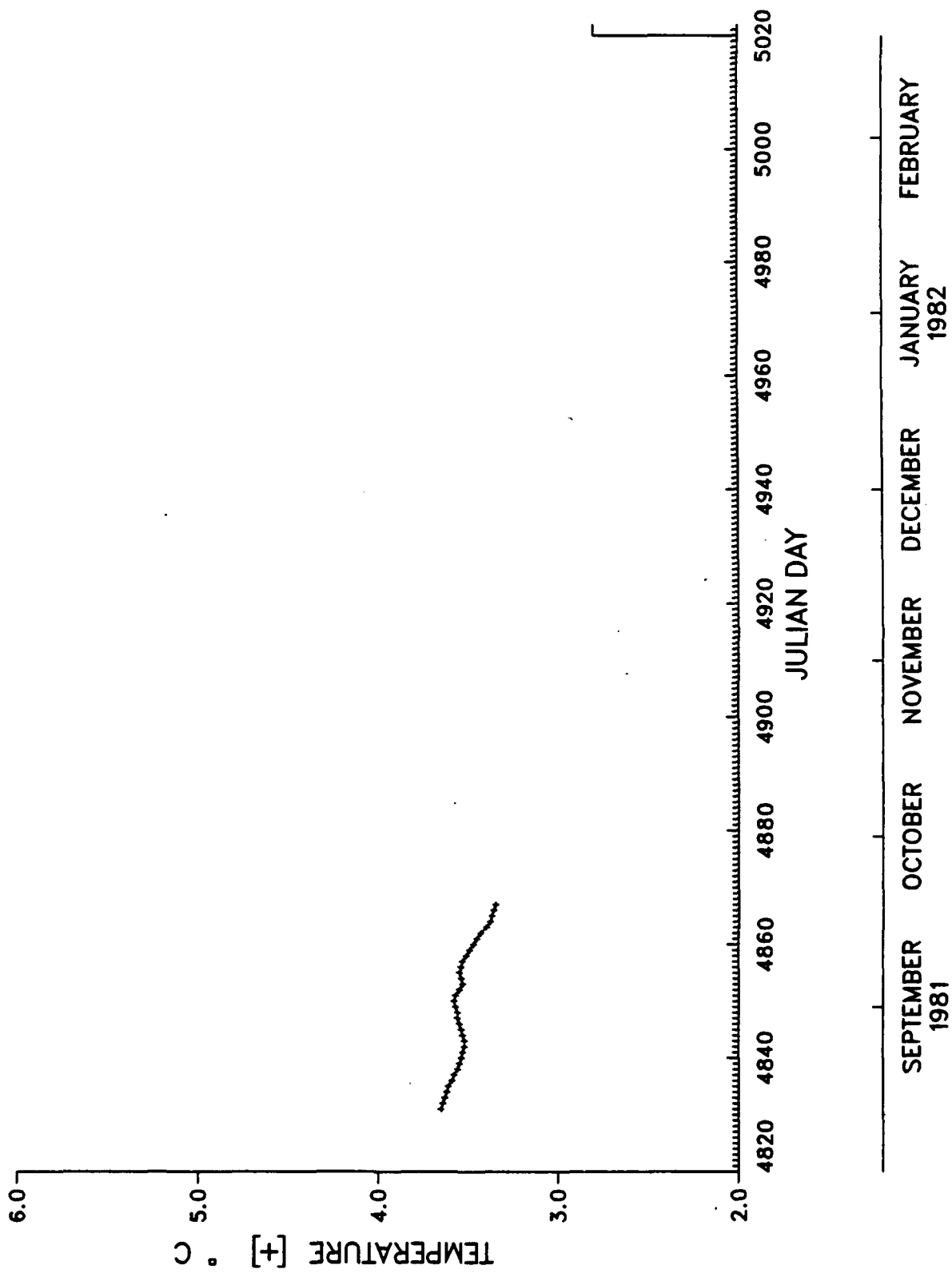


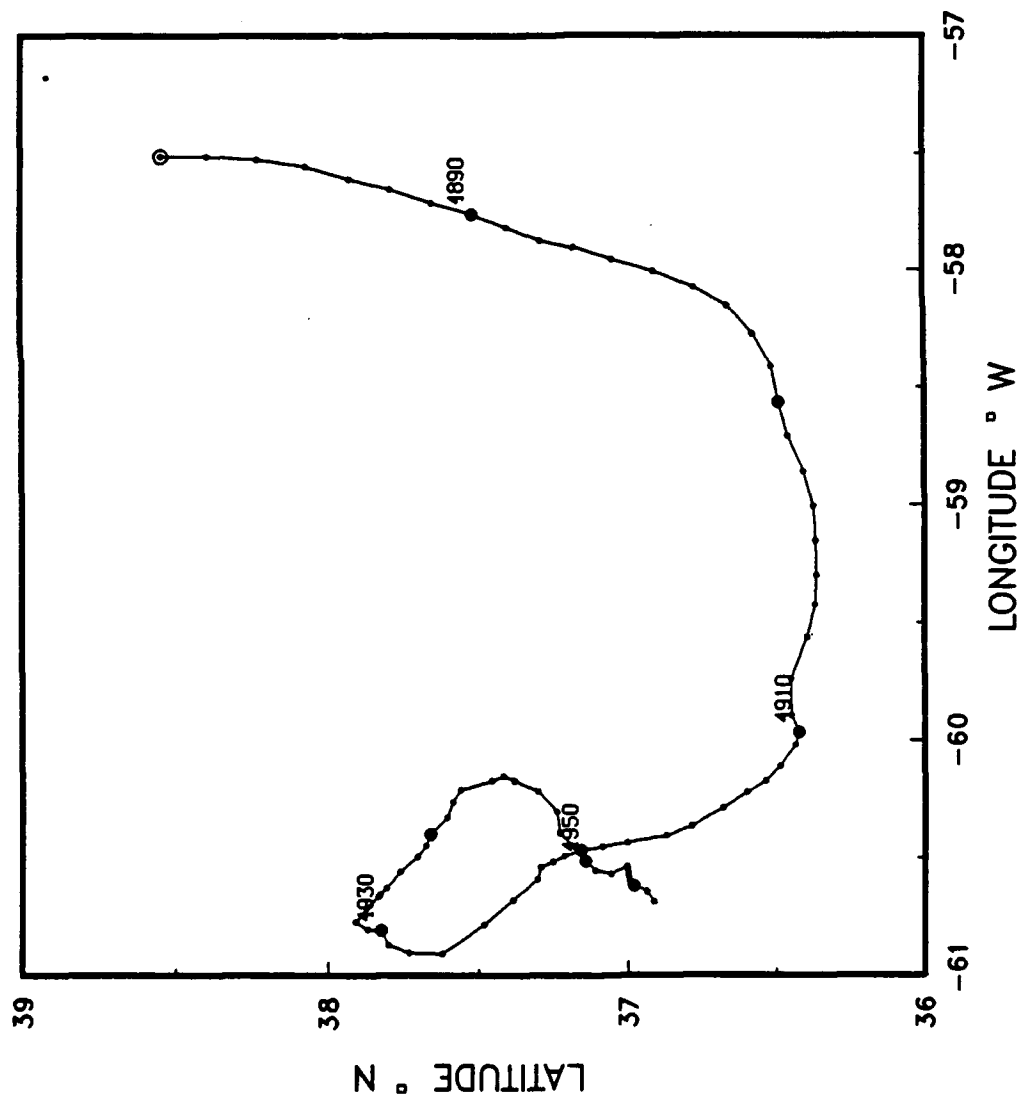


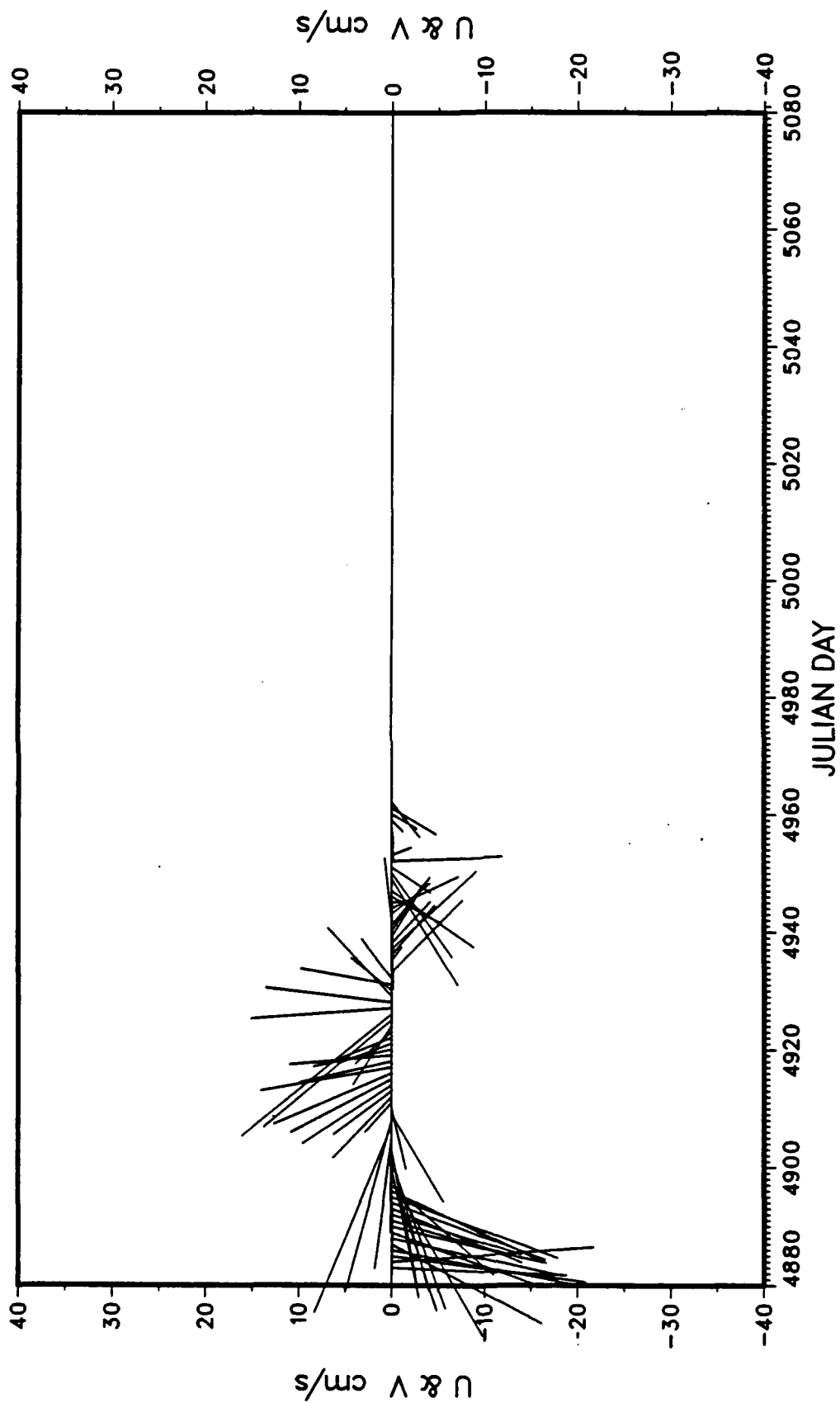
SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

GUSREX 165A



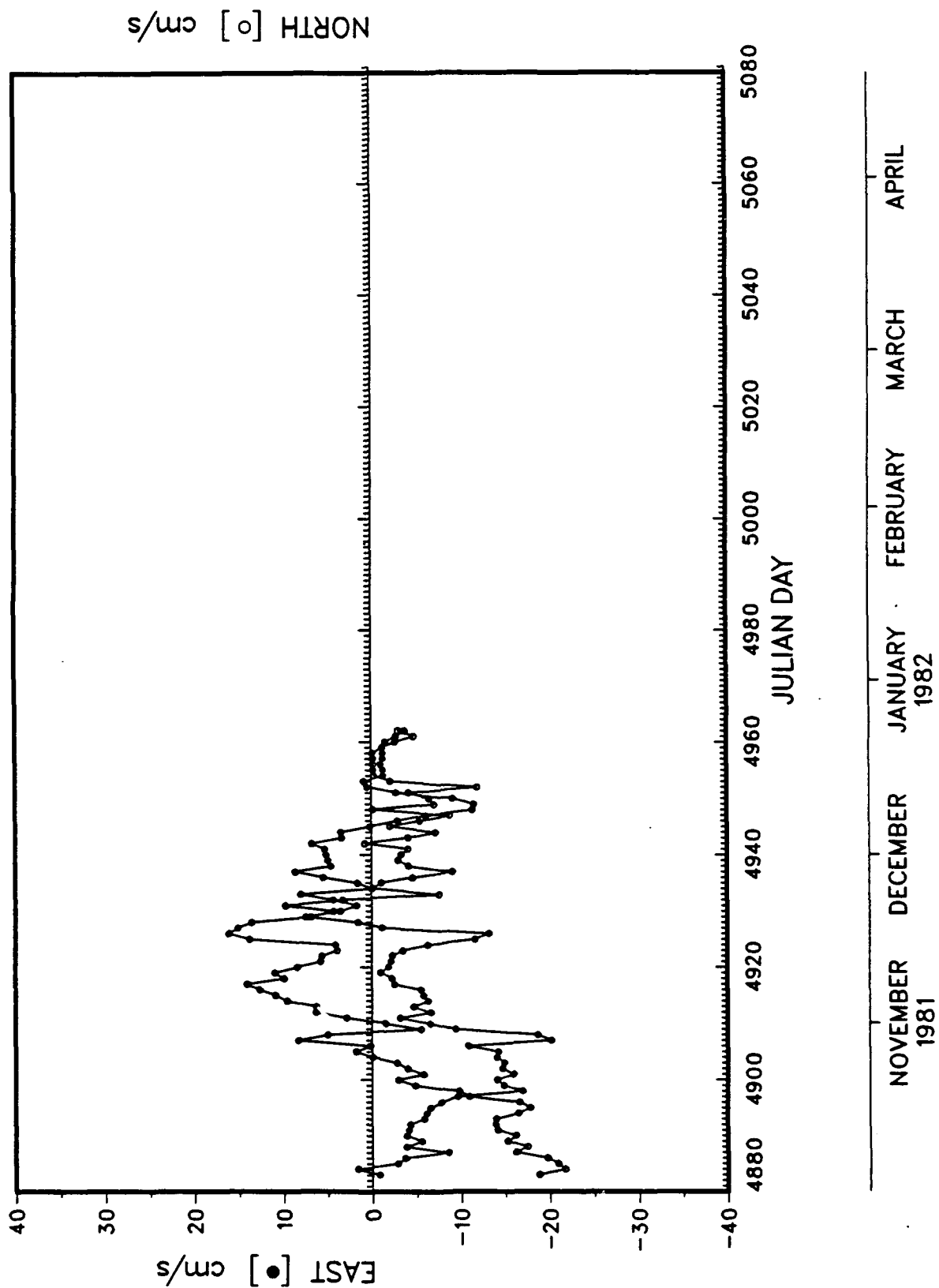




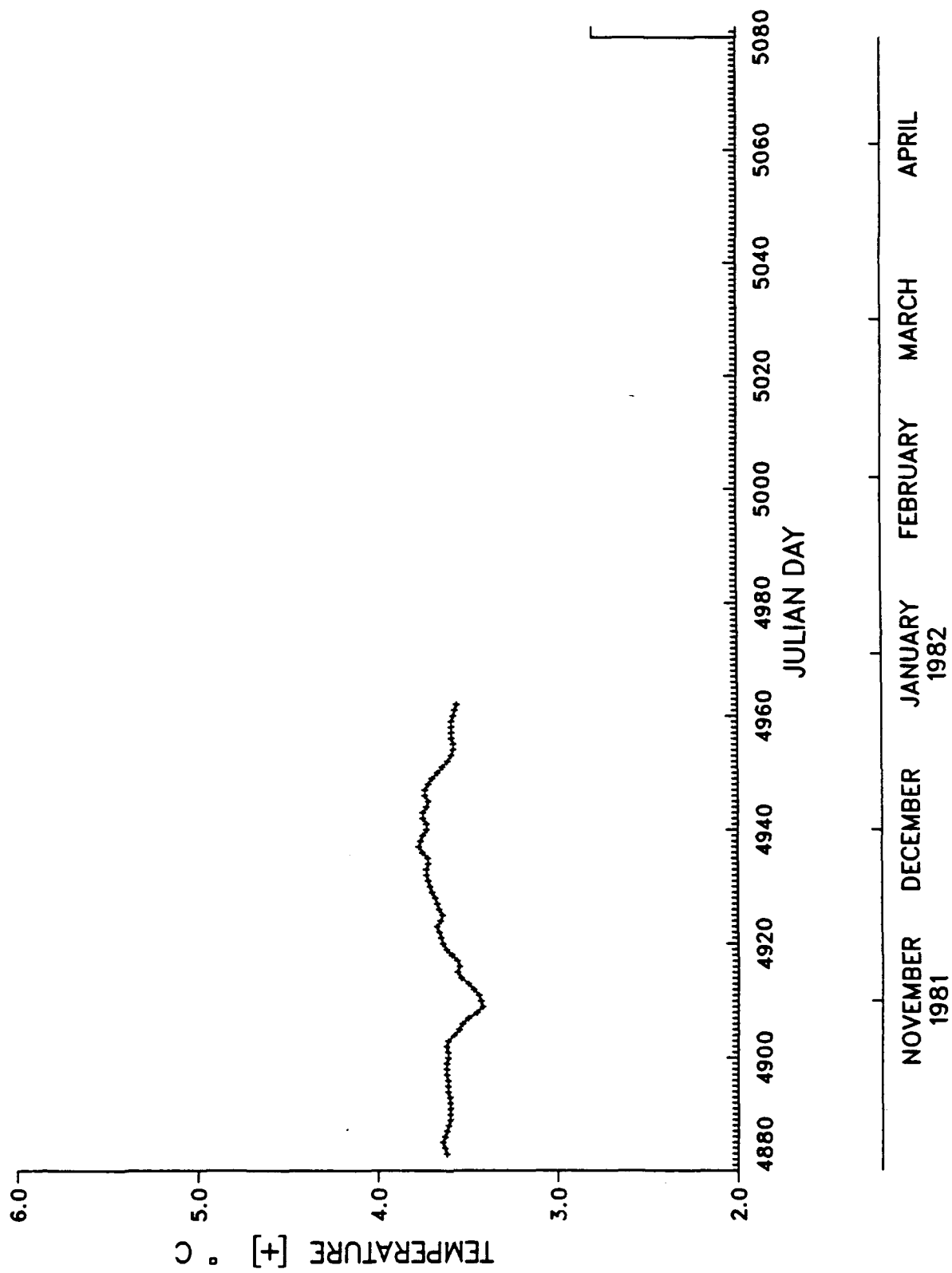


NOVEMBER 1981 DECEMBER JANUARY 1982 FEBRUARY MARCH APRIL

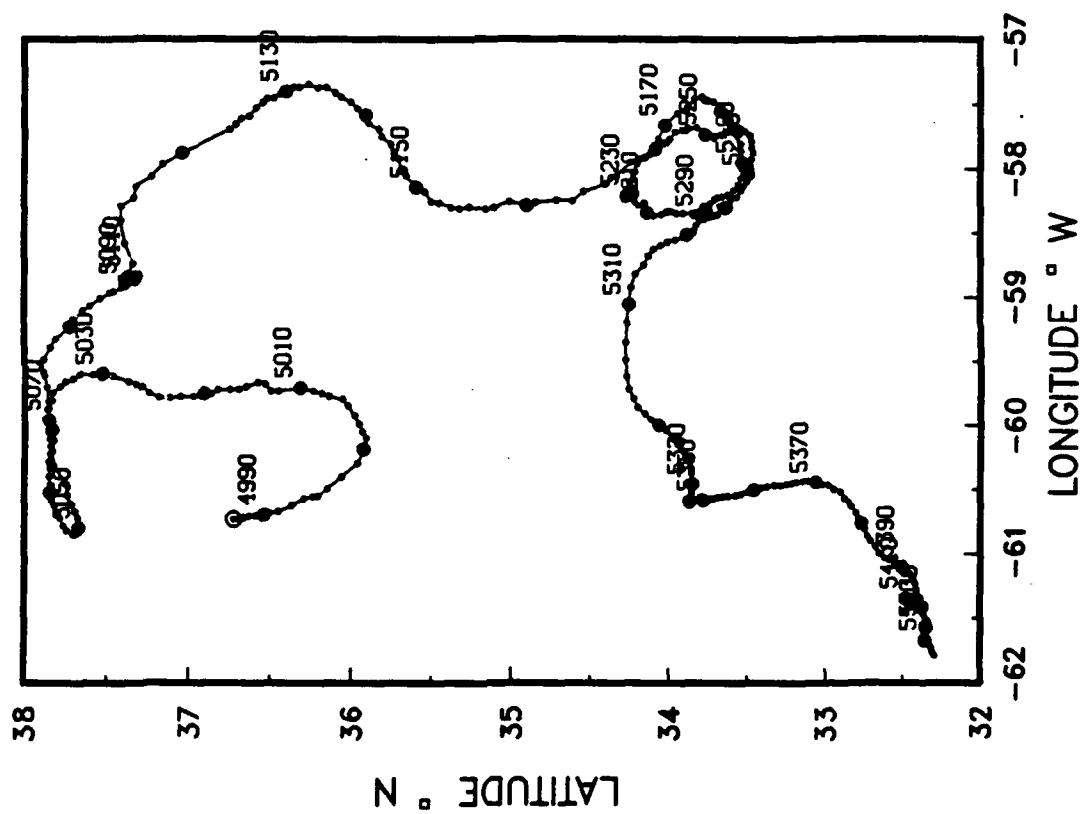
GUSREX 165B



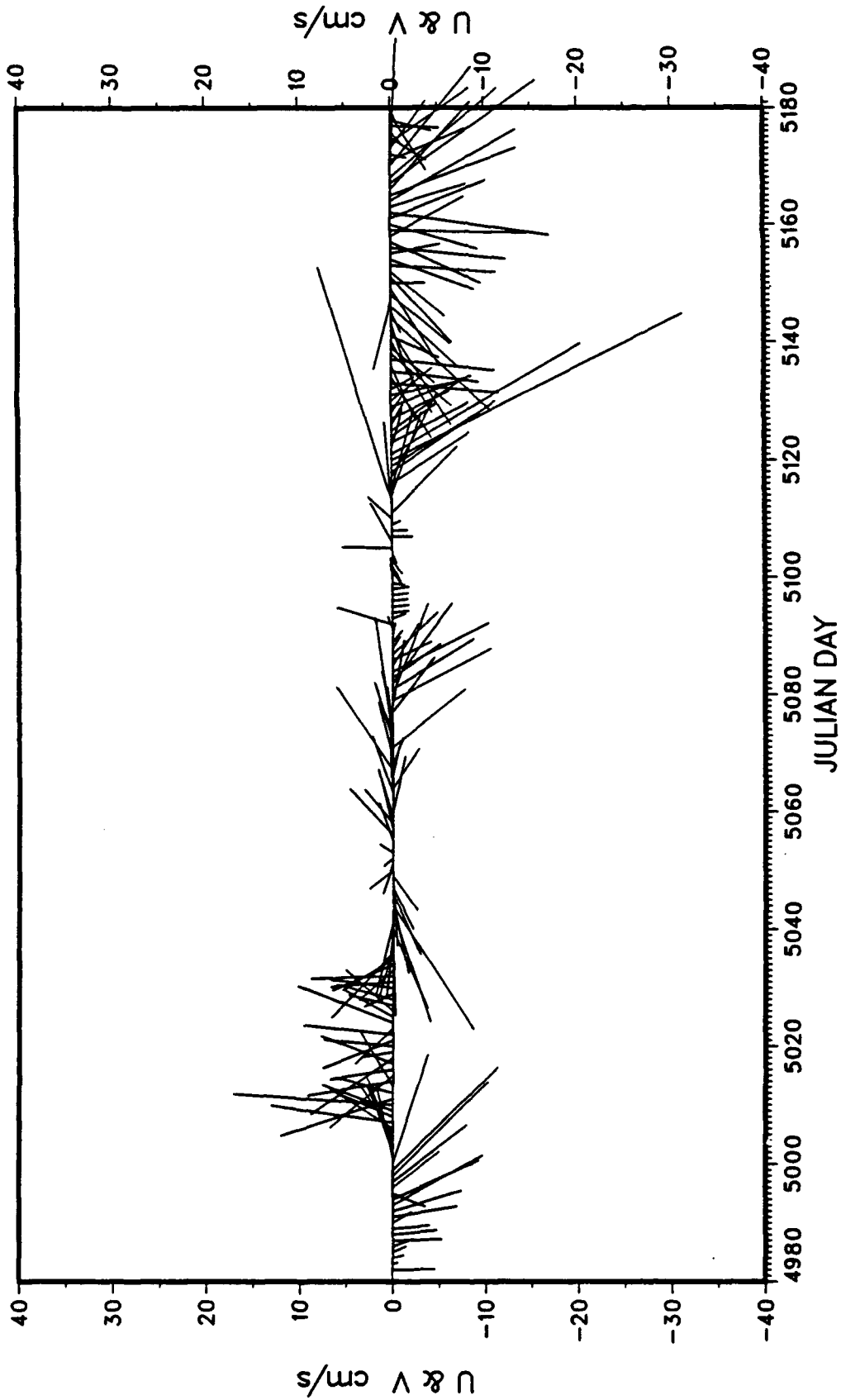
GUSREX 165B



GUSREX 165C



GUSREX 165C



FEBRUARY 1982

MARCH

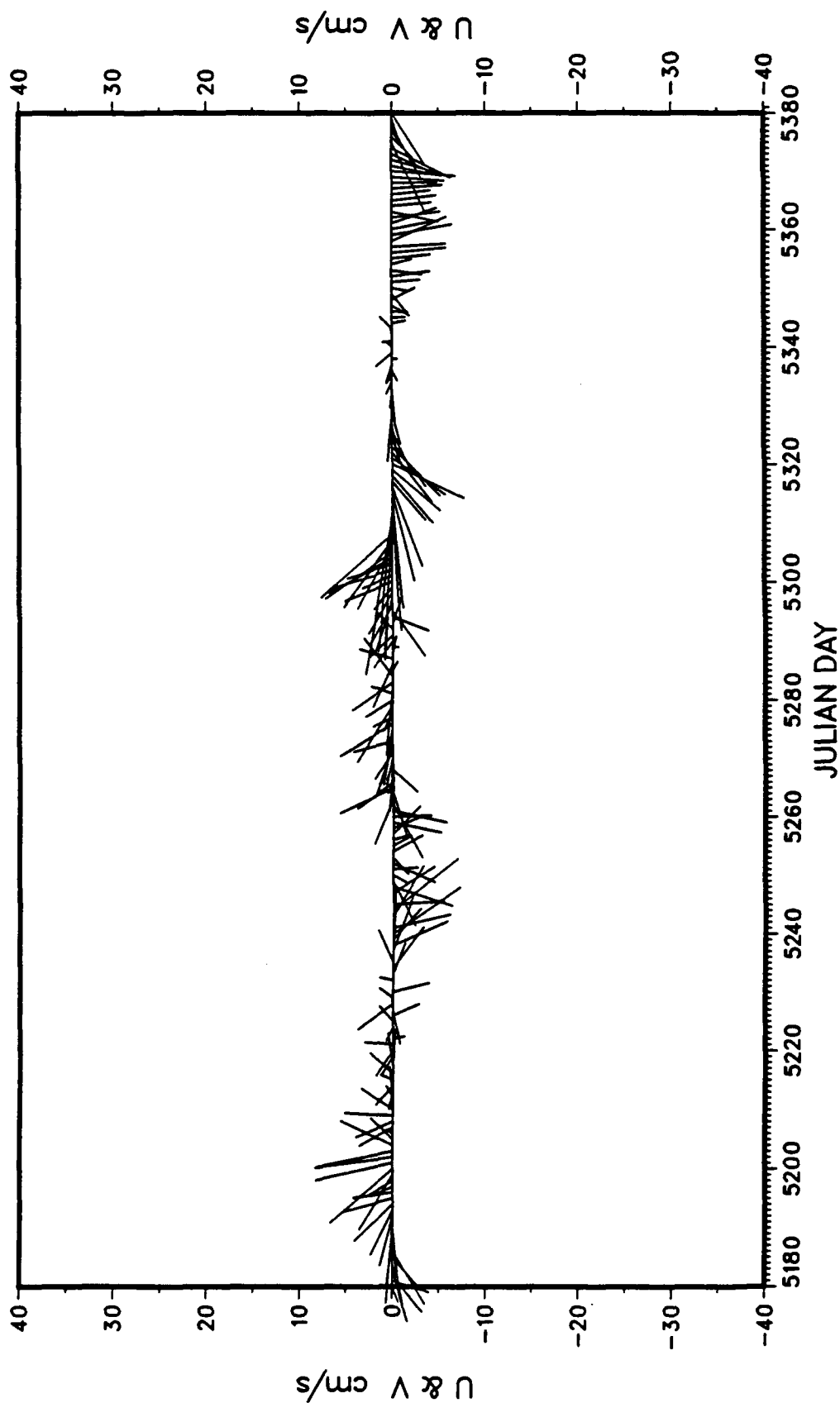
APRIL

MAY

JUNE

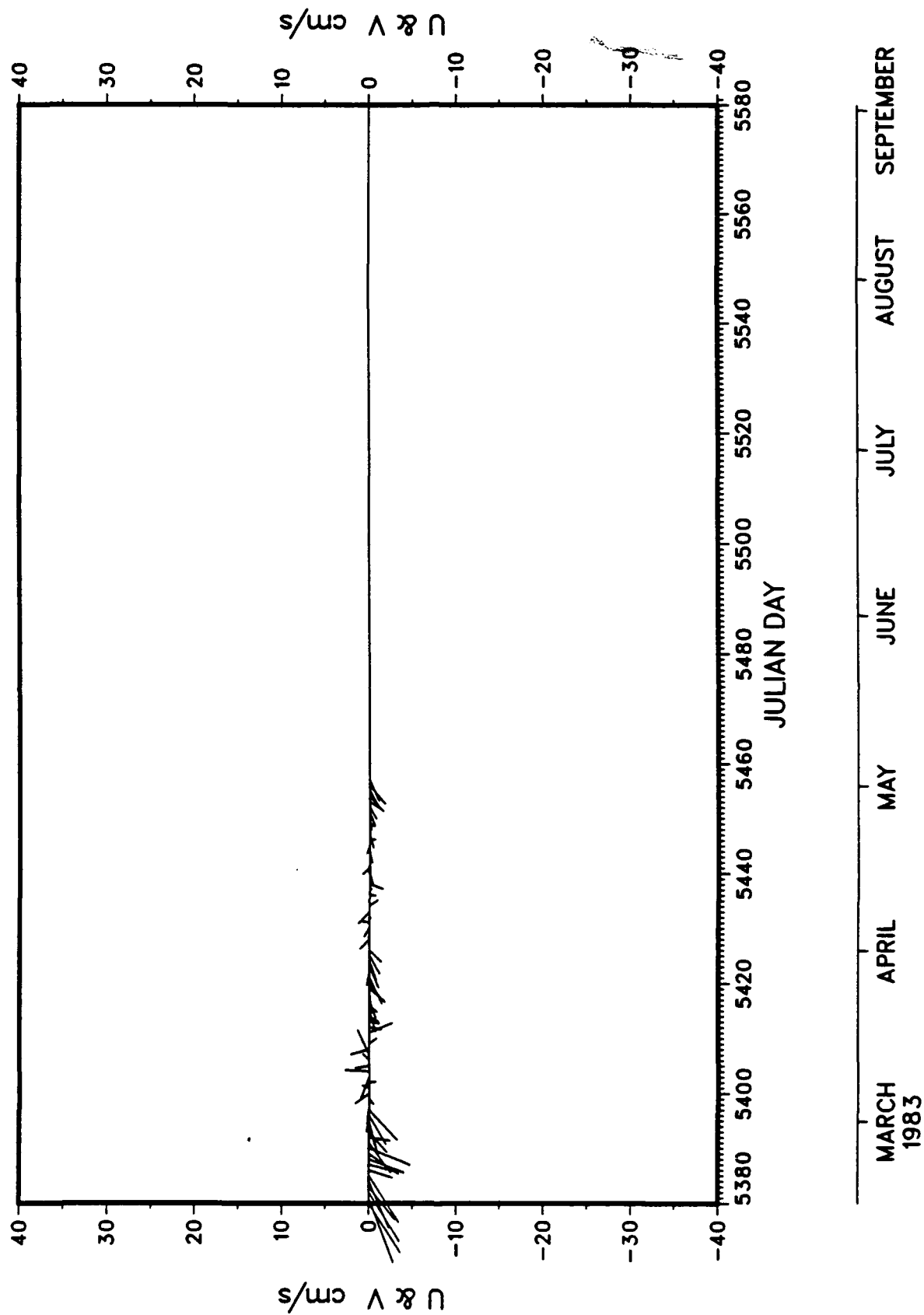
JULY

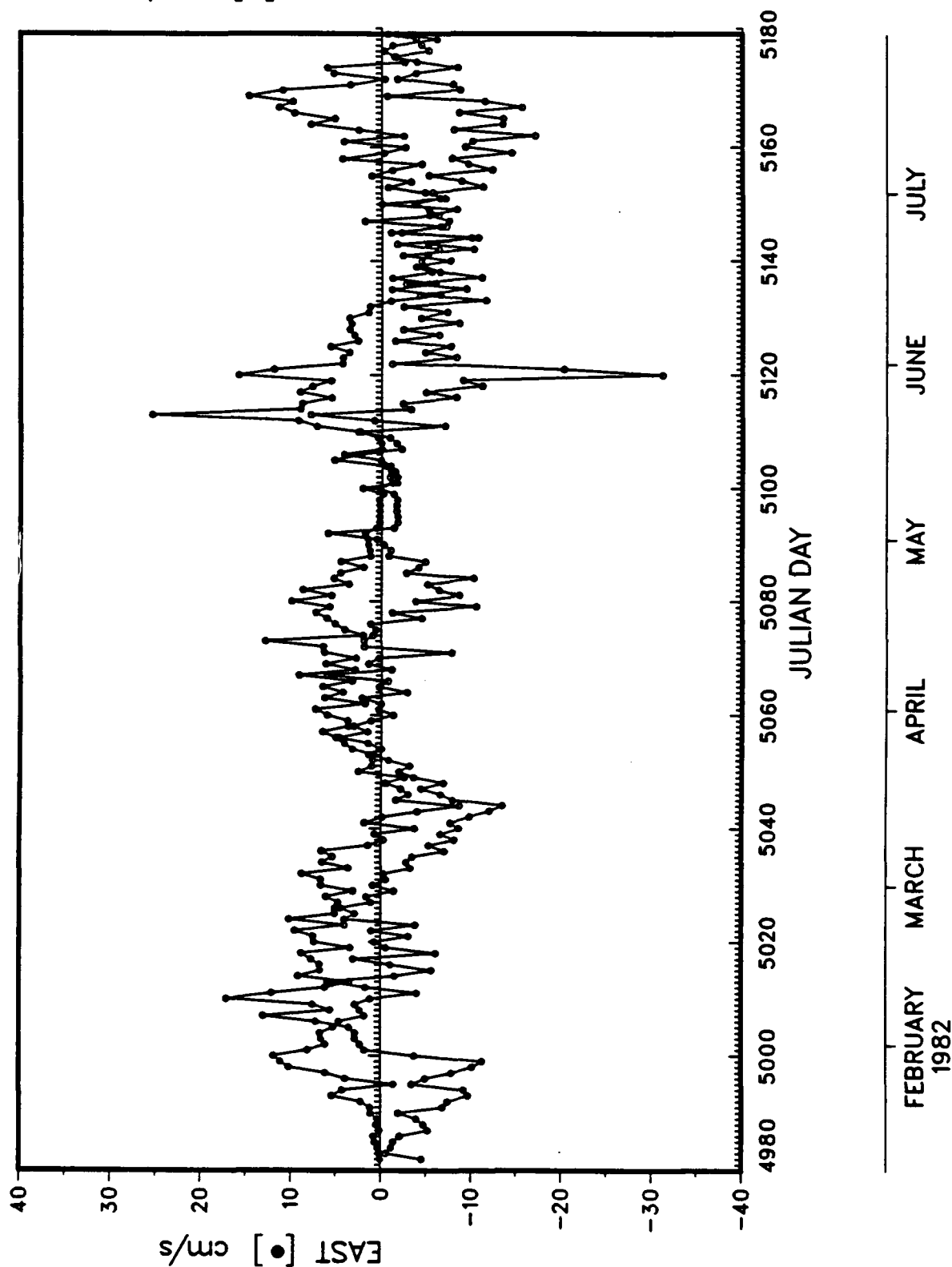
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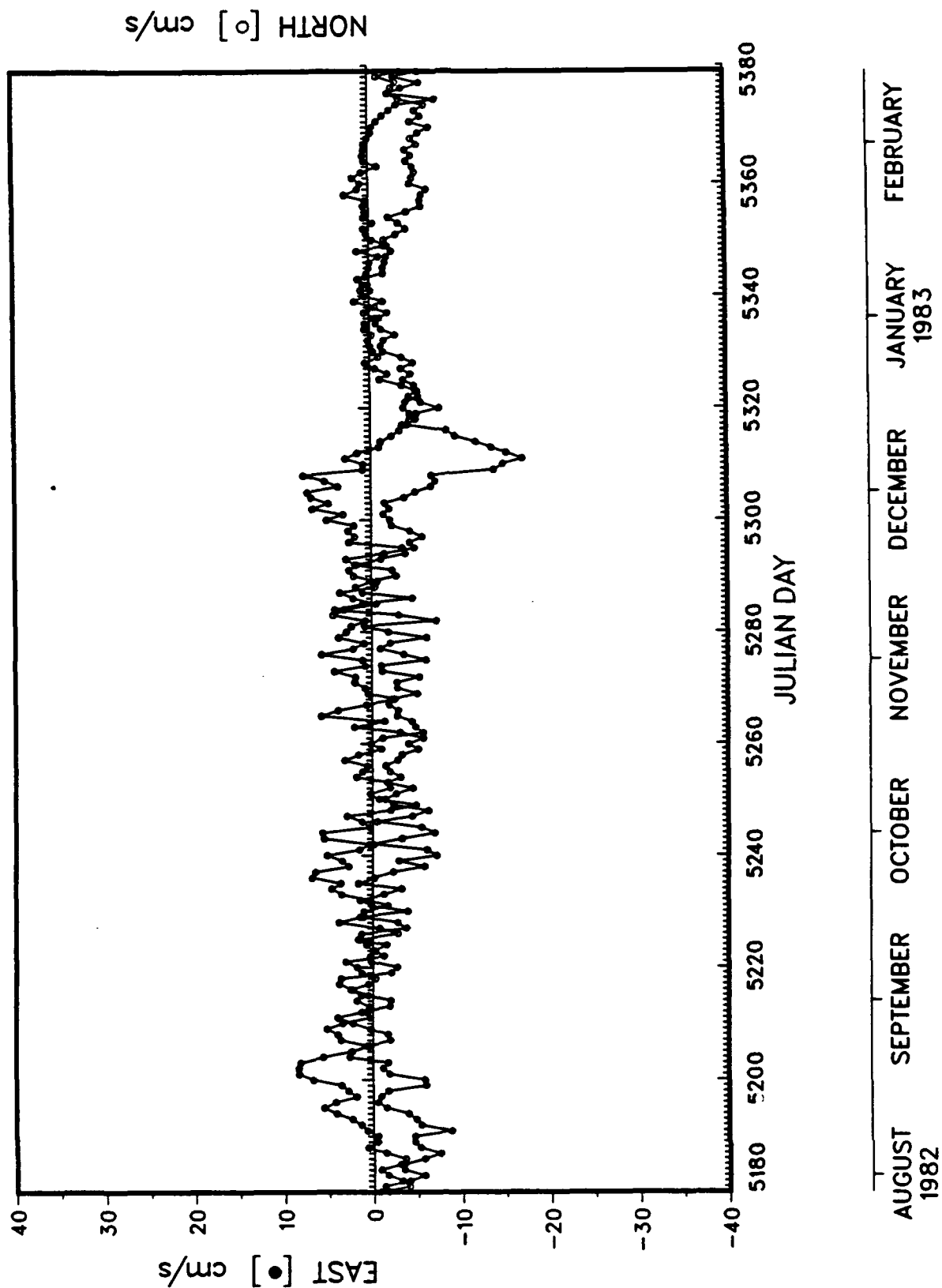


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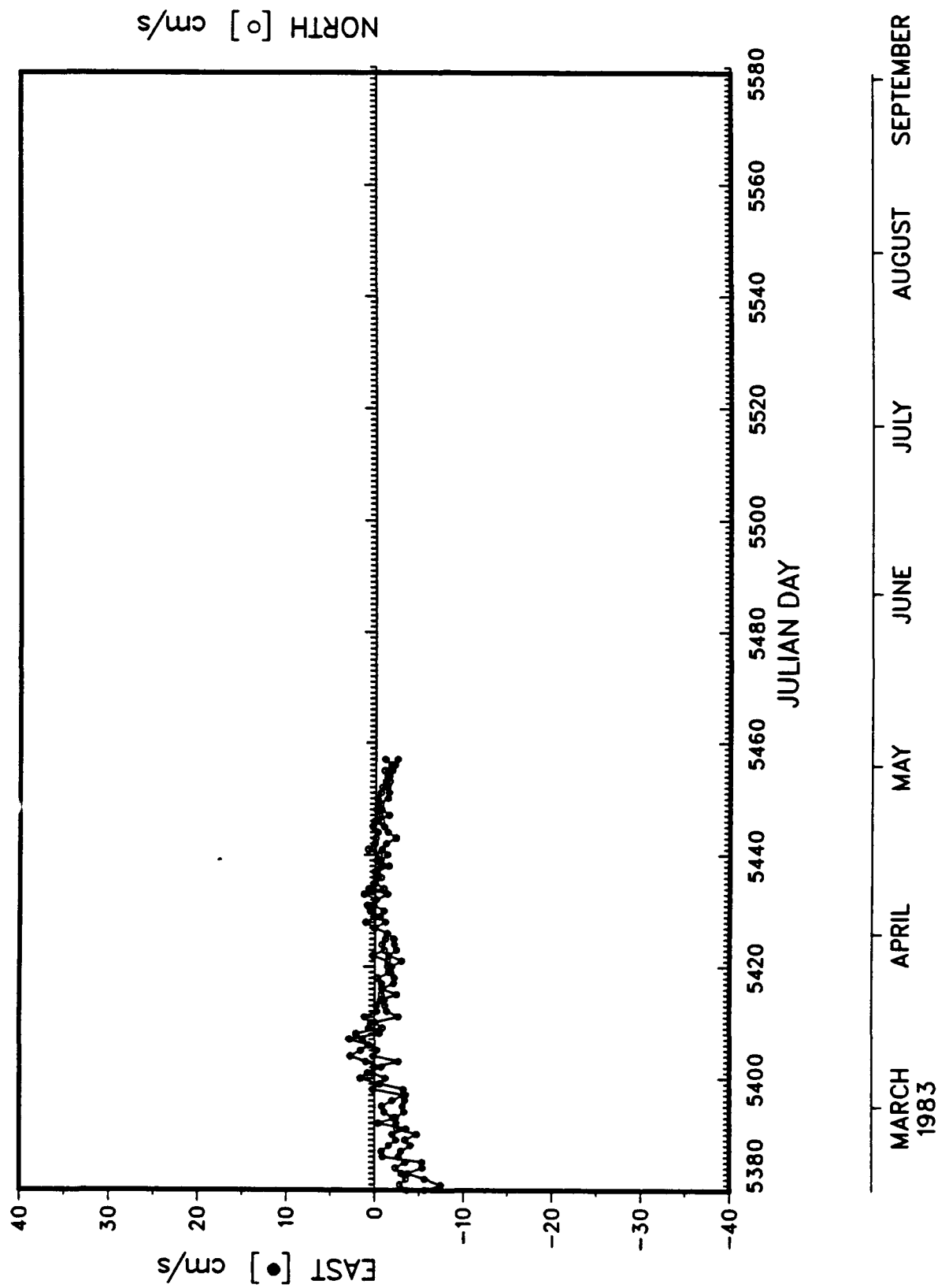
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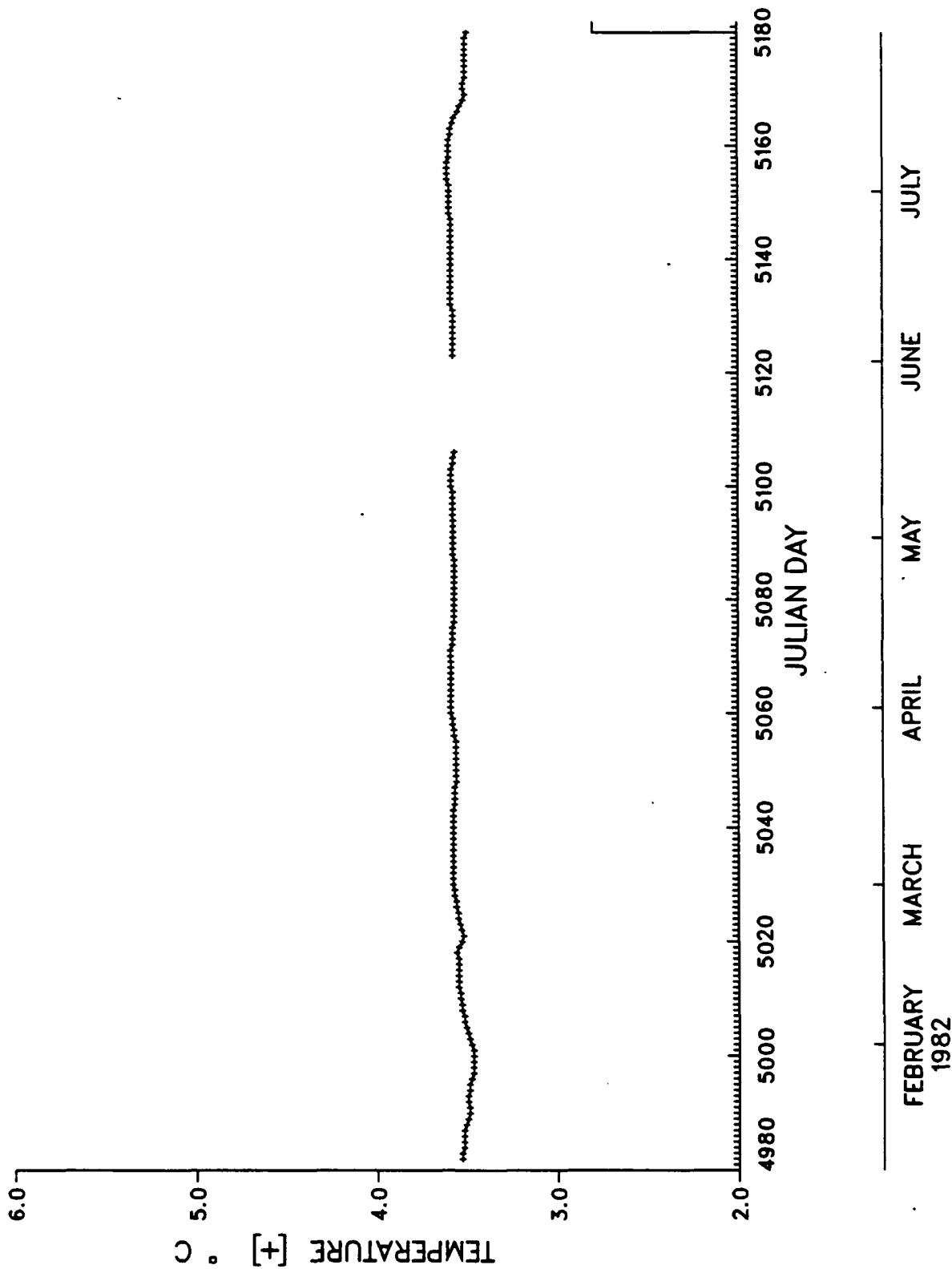




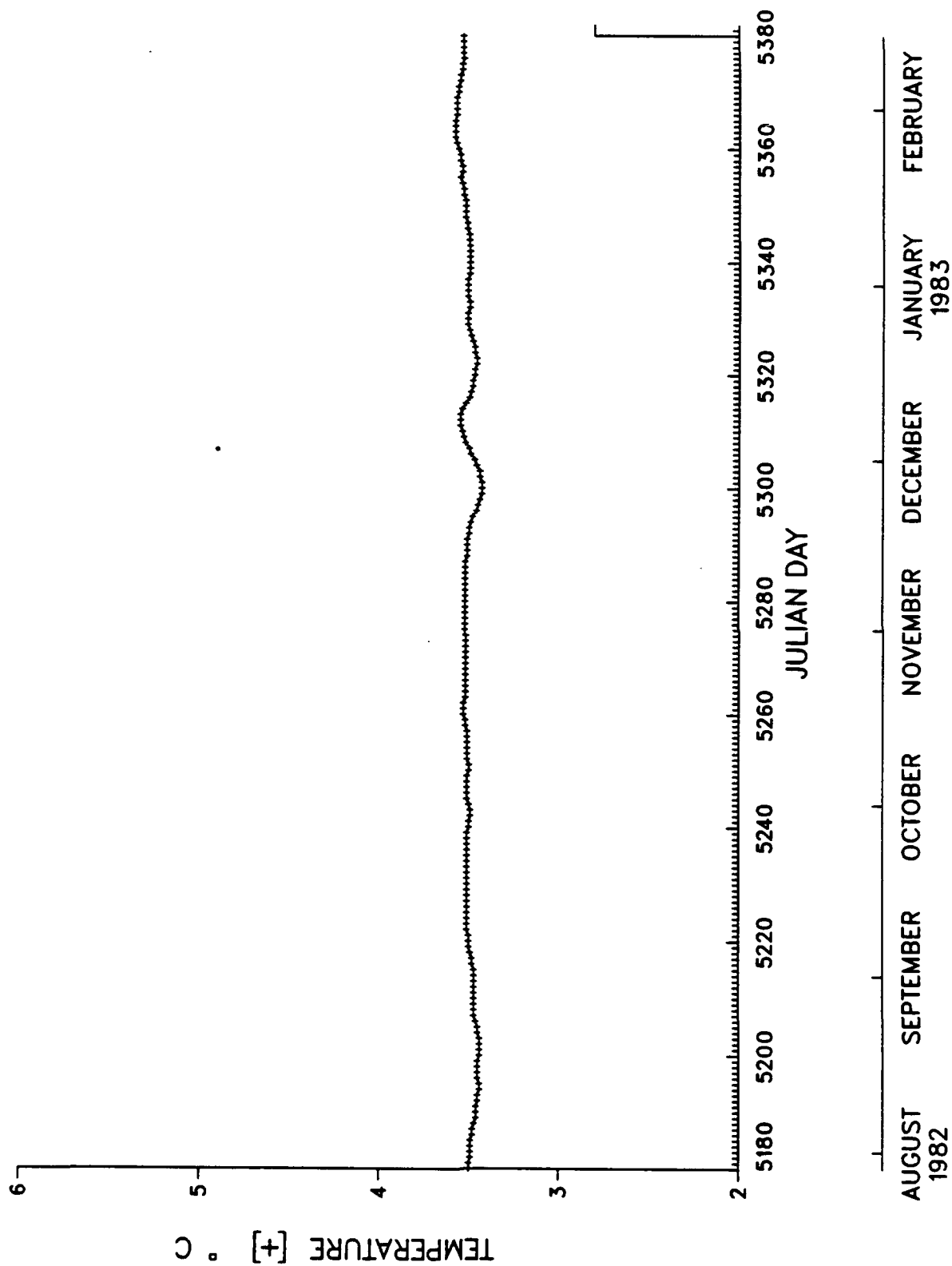


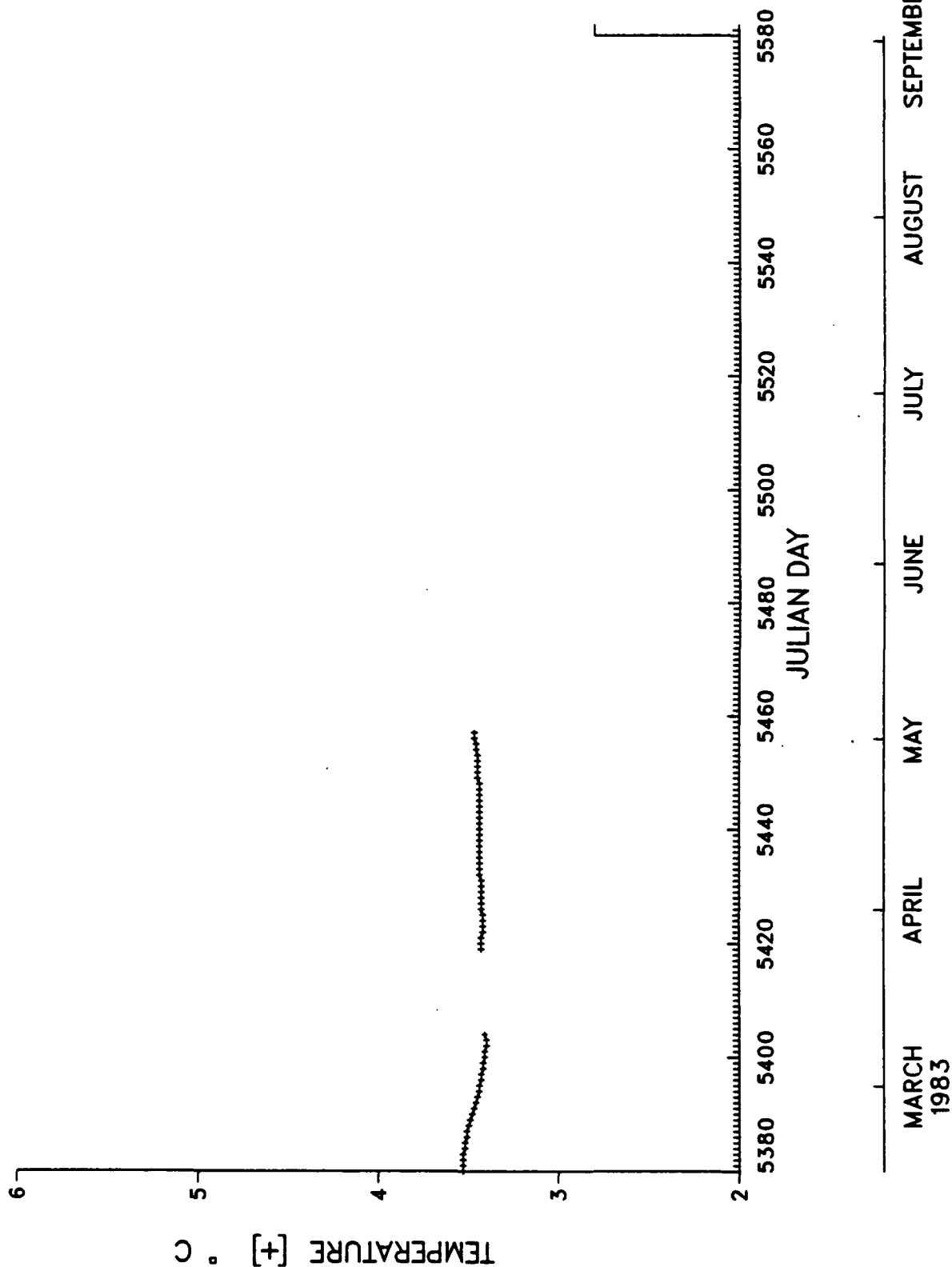
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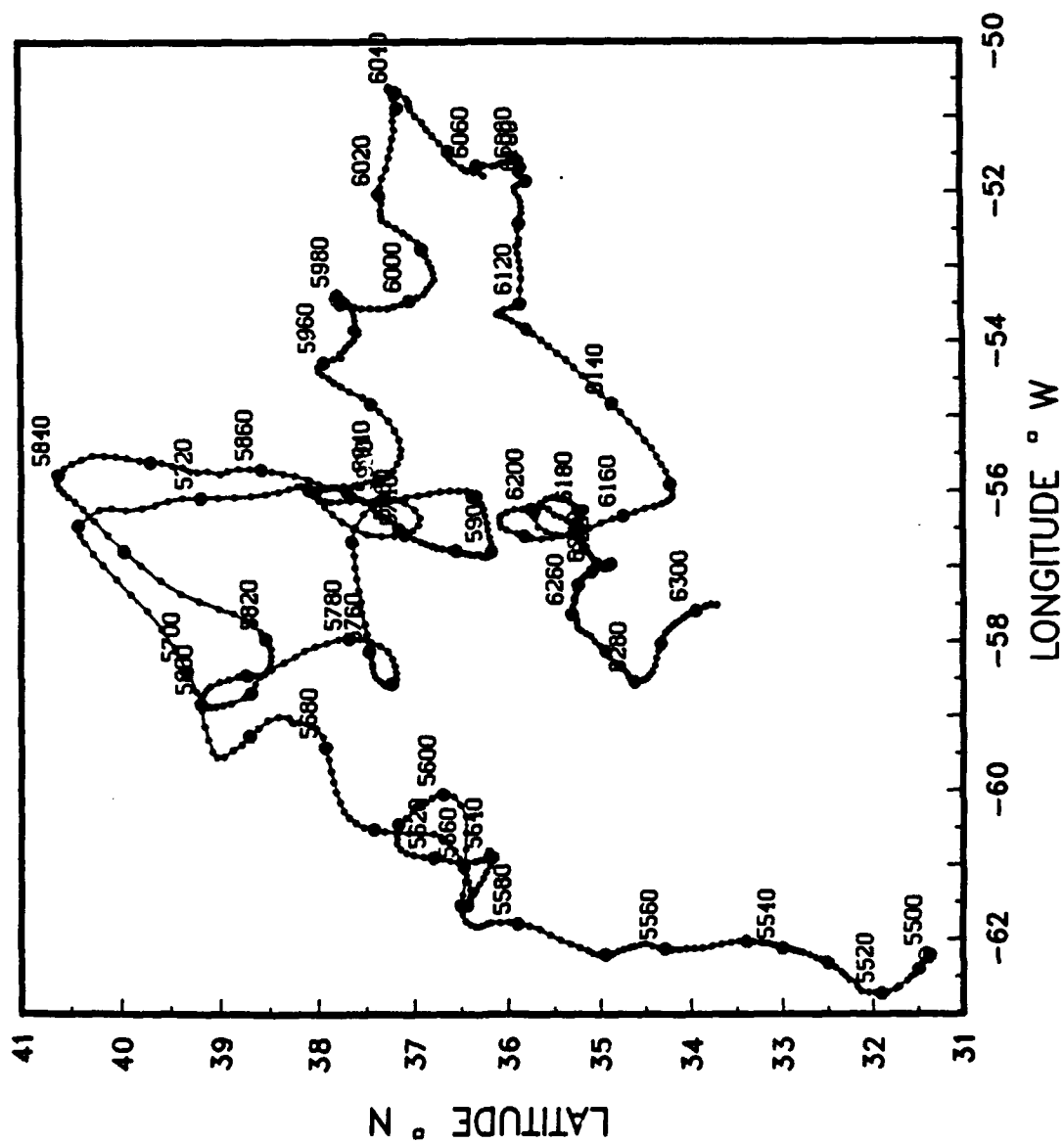


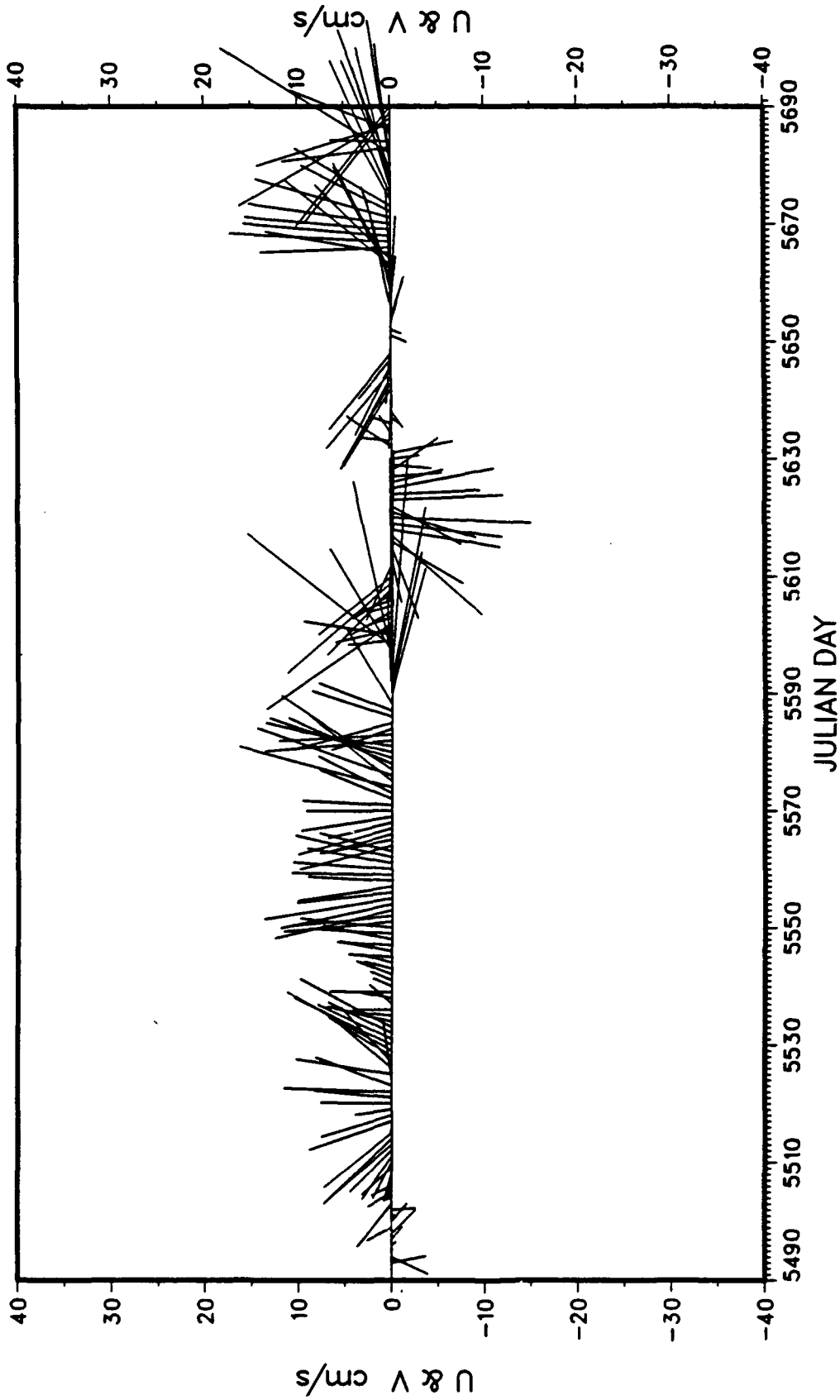
GUSREX 165C





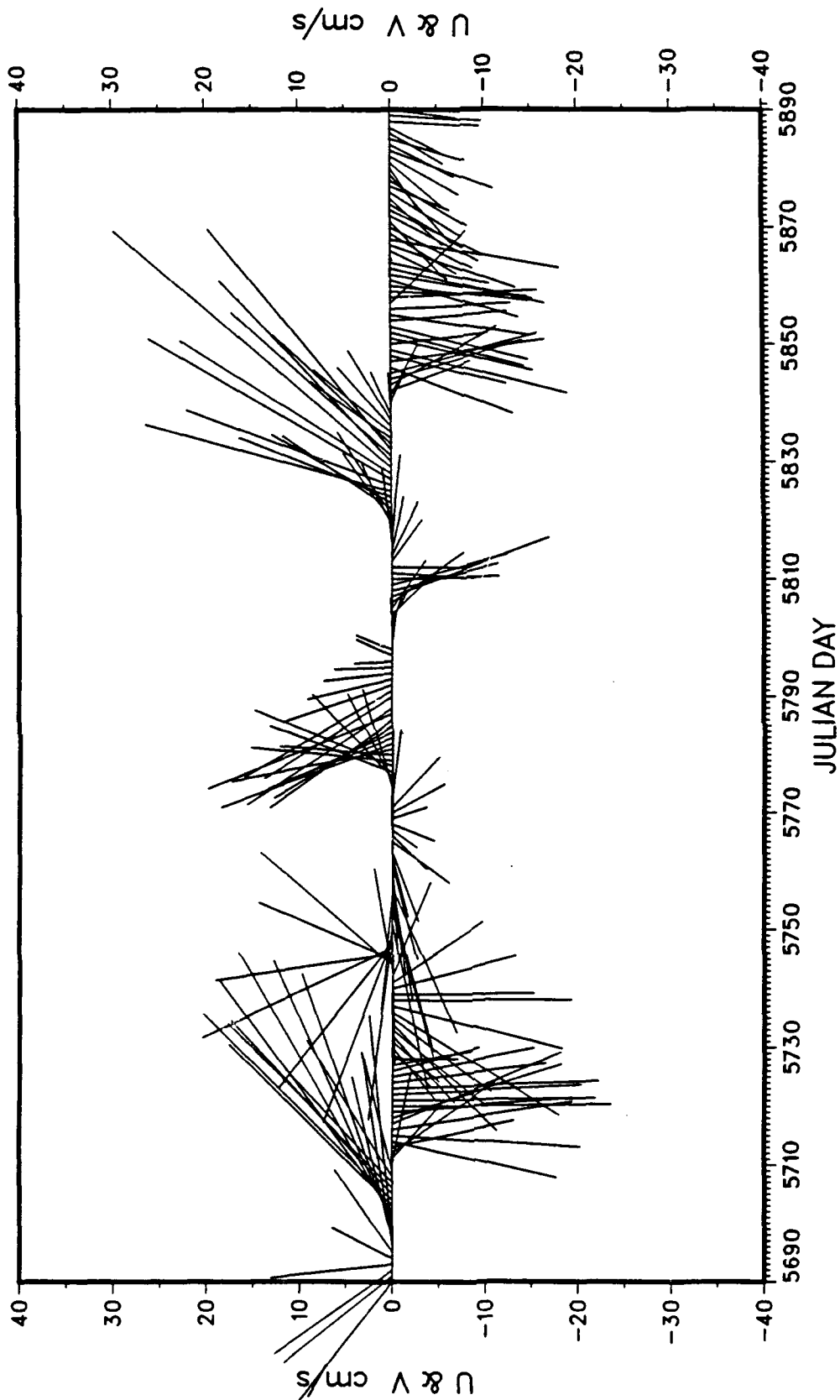
GUSREX 165D





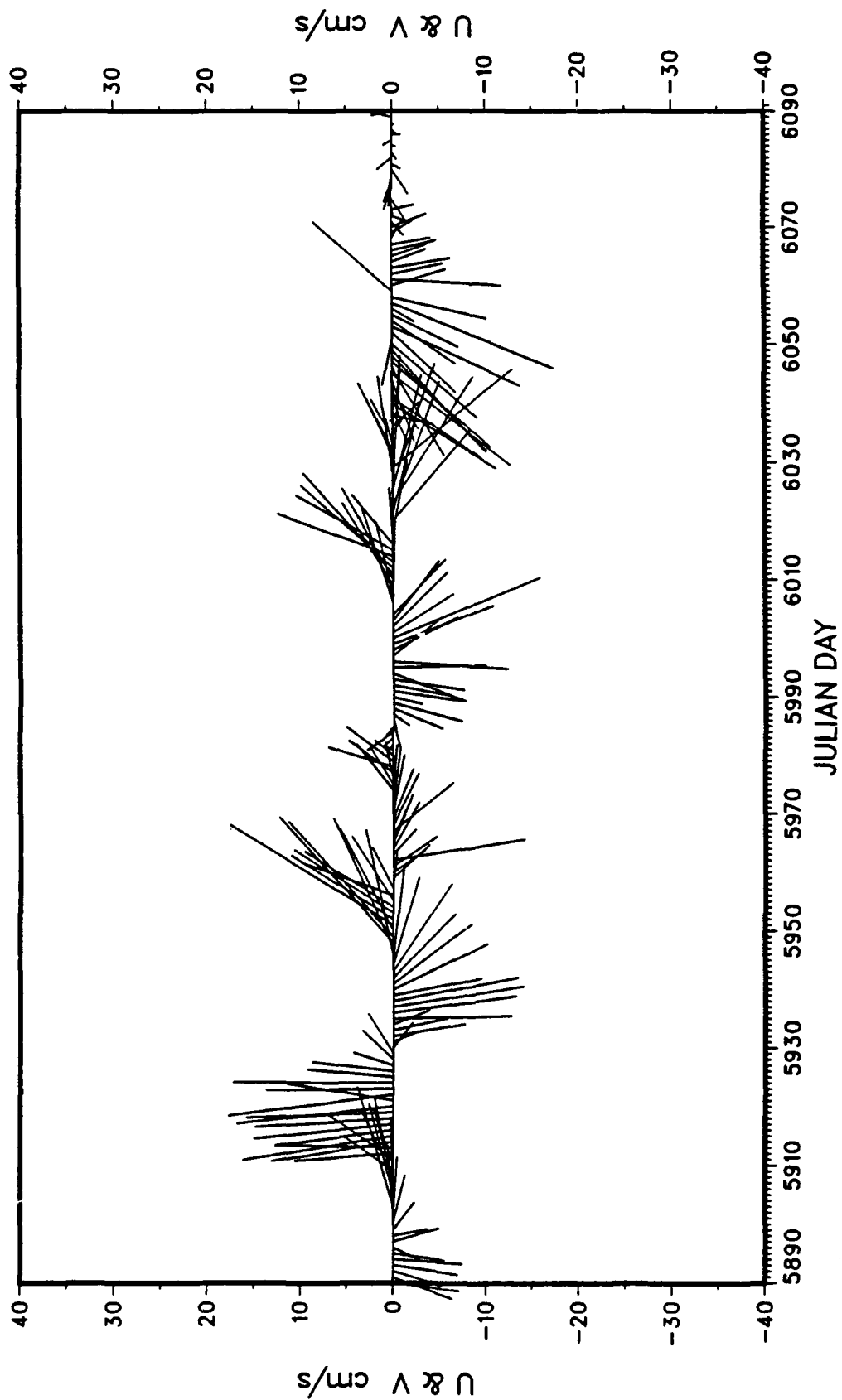
JULY 1983
 AUGUST
 SEPTEMBER
 OCTOBER
 NOVEMBER
 DECEMBER

GUSREX 165D



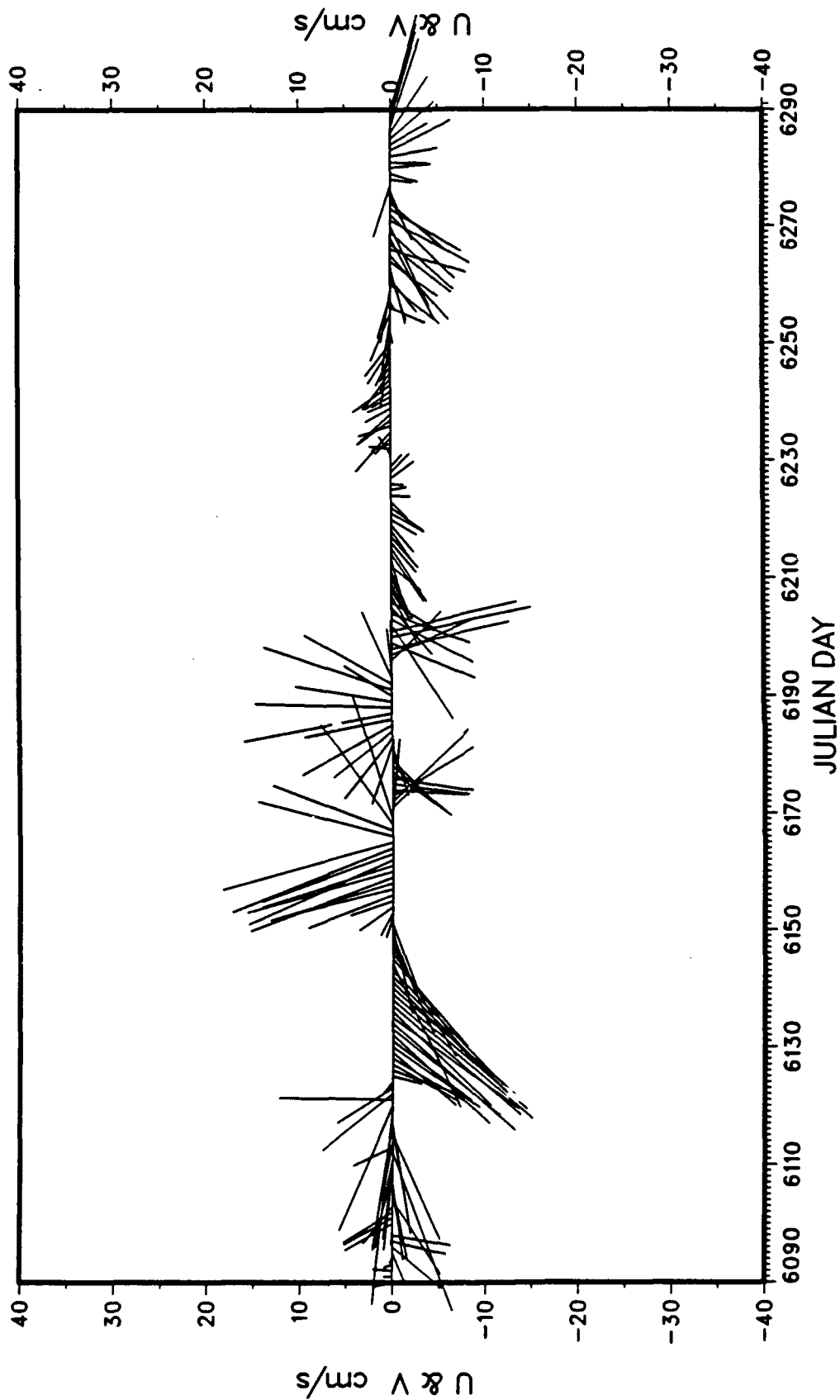
JANUARY 1984 FEBRUARY MARCH APRIL MAY JUNE JULY

GUSREX 165D

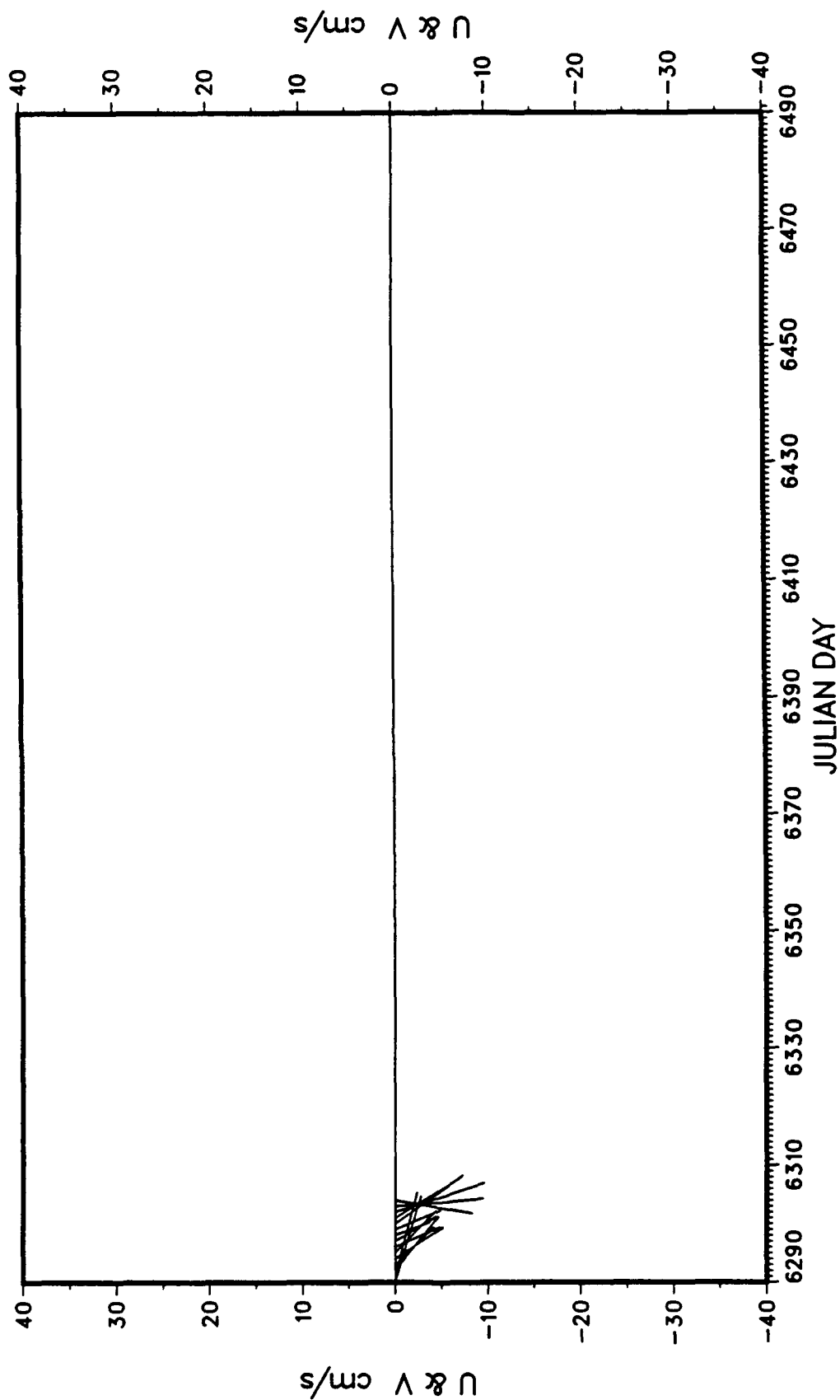


AUGUST 1984 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1985

GUSREX 165D

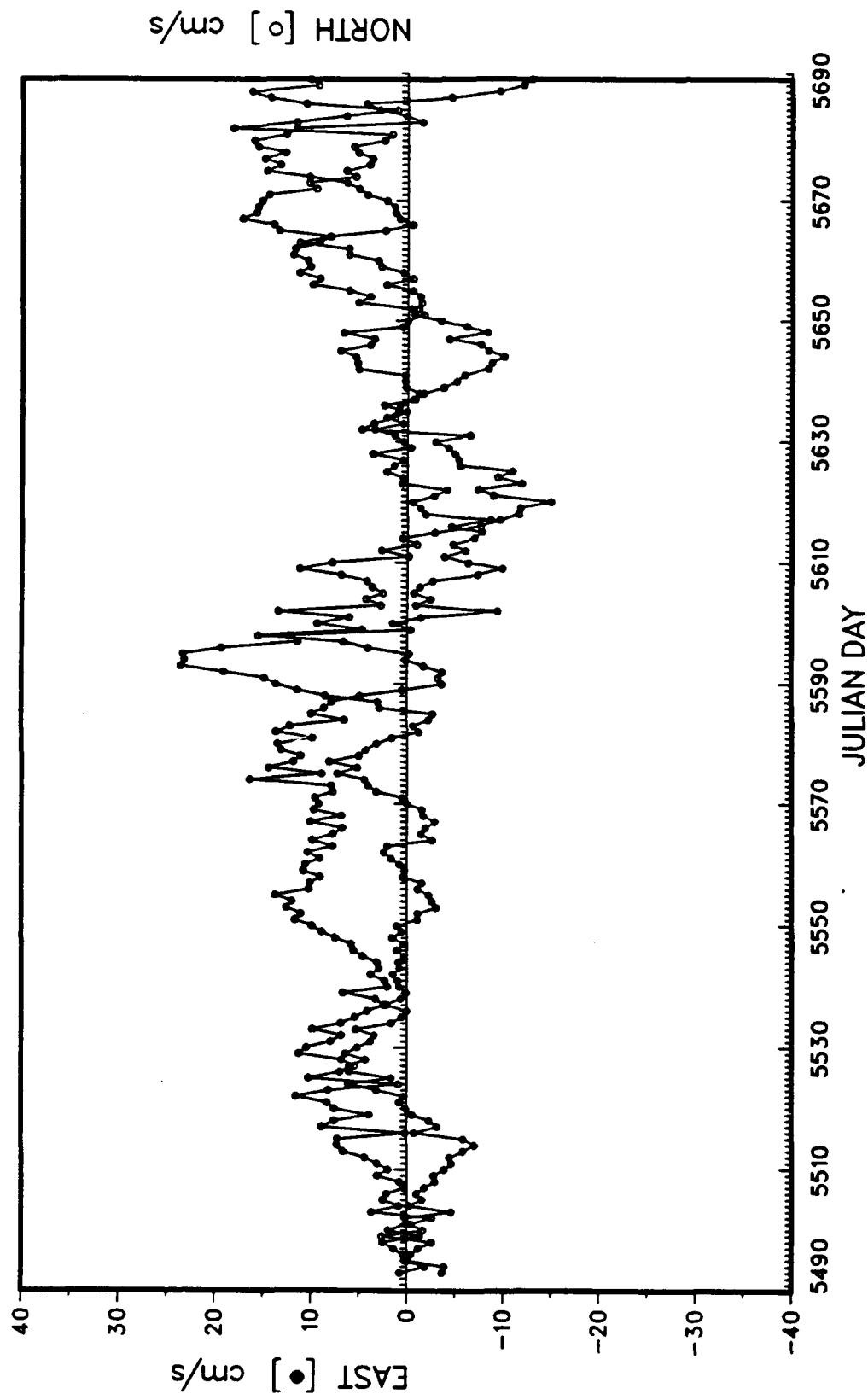


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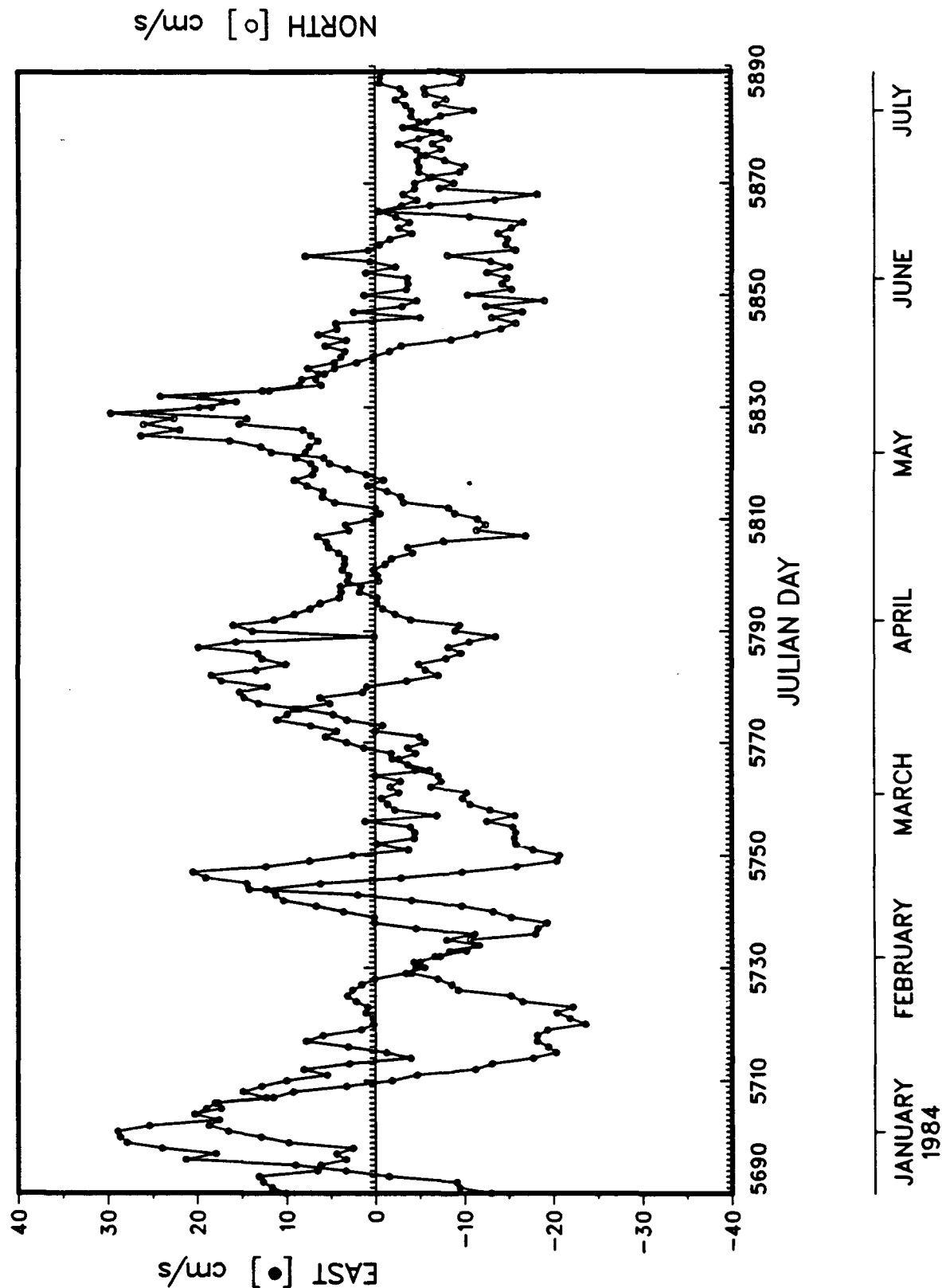


SEPTEMBER 1985 OCTOBER NOVEMBER DECEMBER JANUARY 1986 FEBRUARY

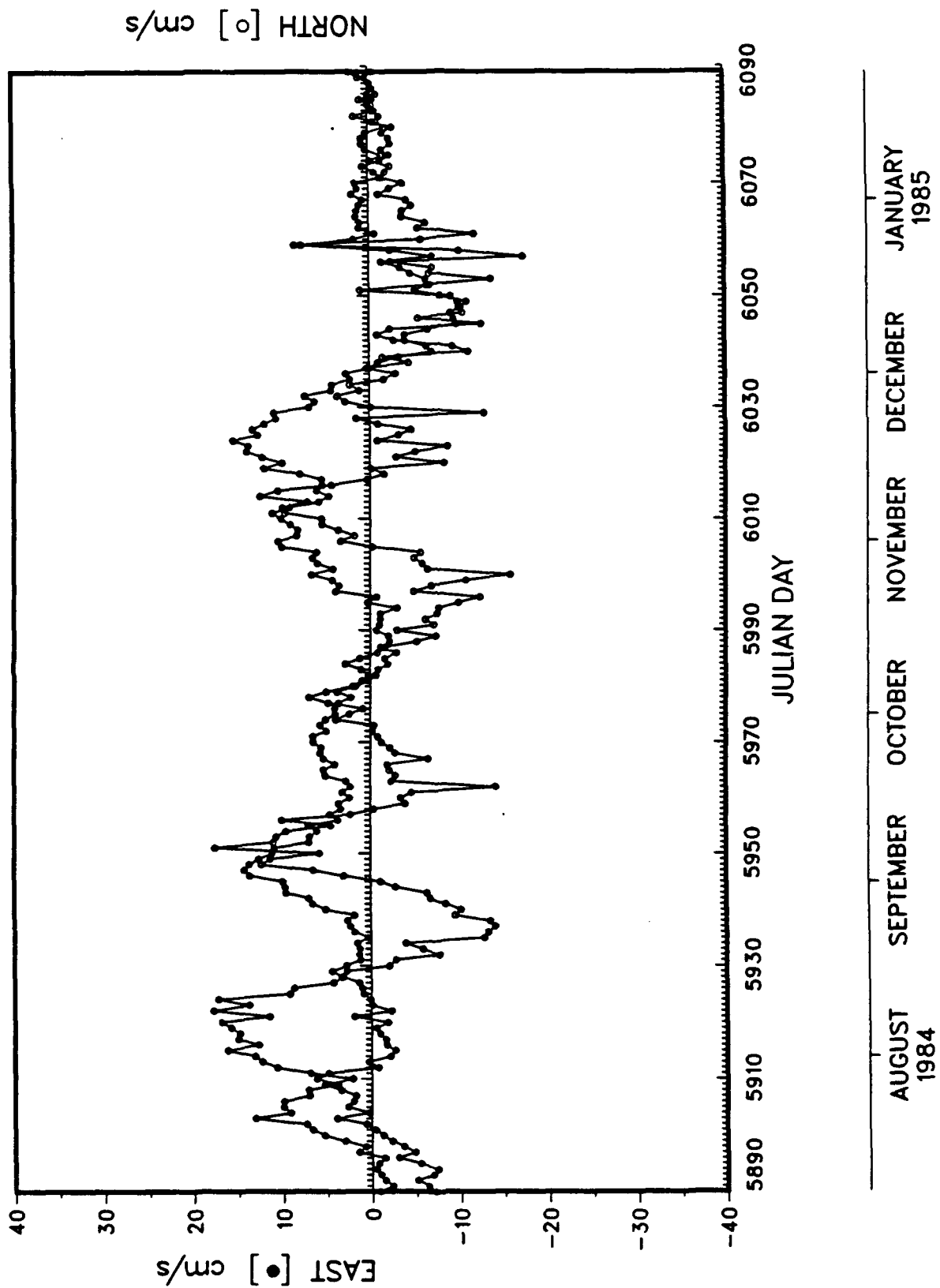
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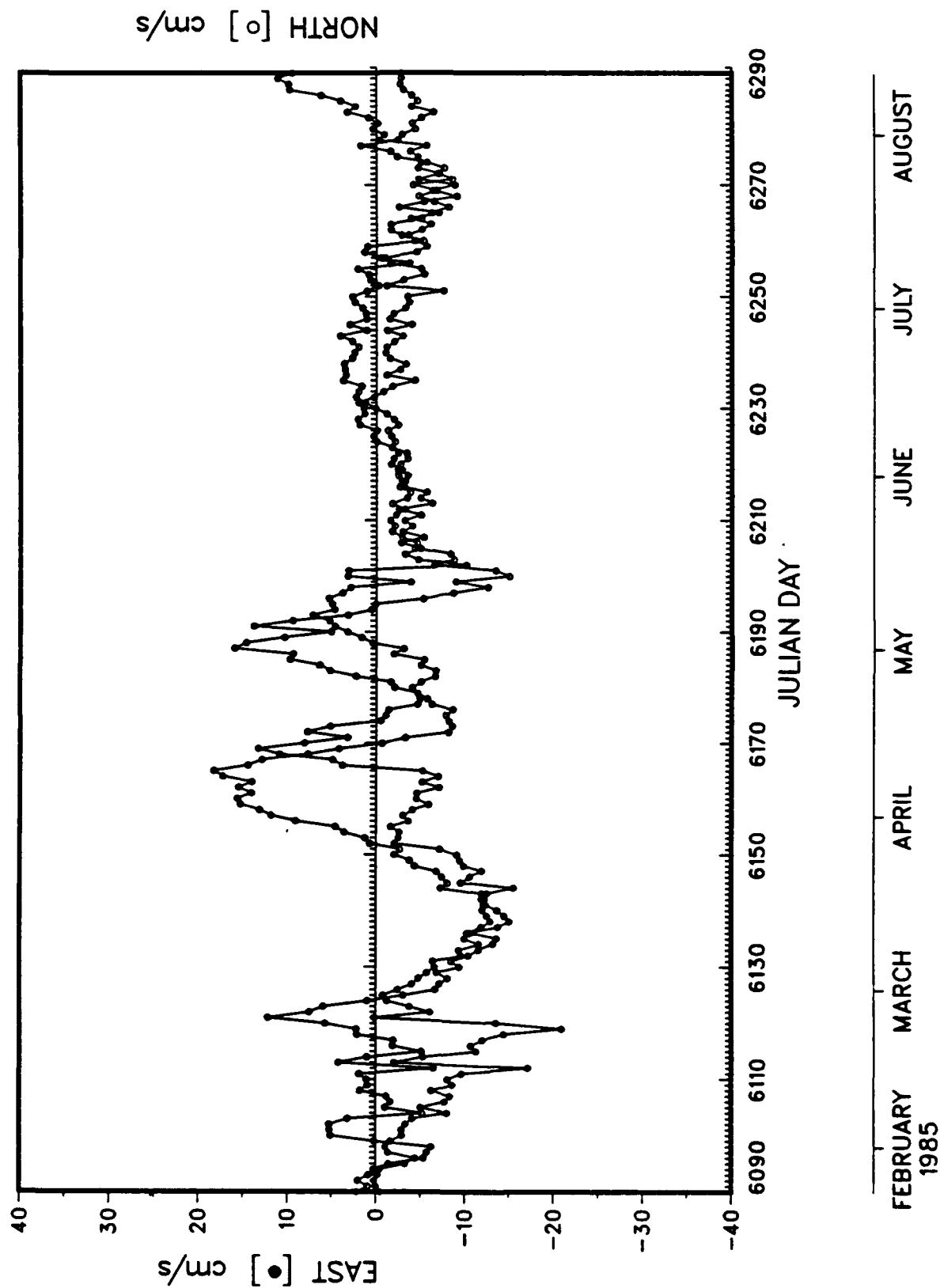


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SEPTEMBER
OCTOBER
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DECEMBER

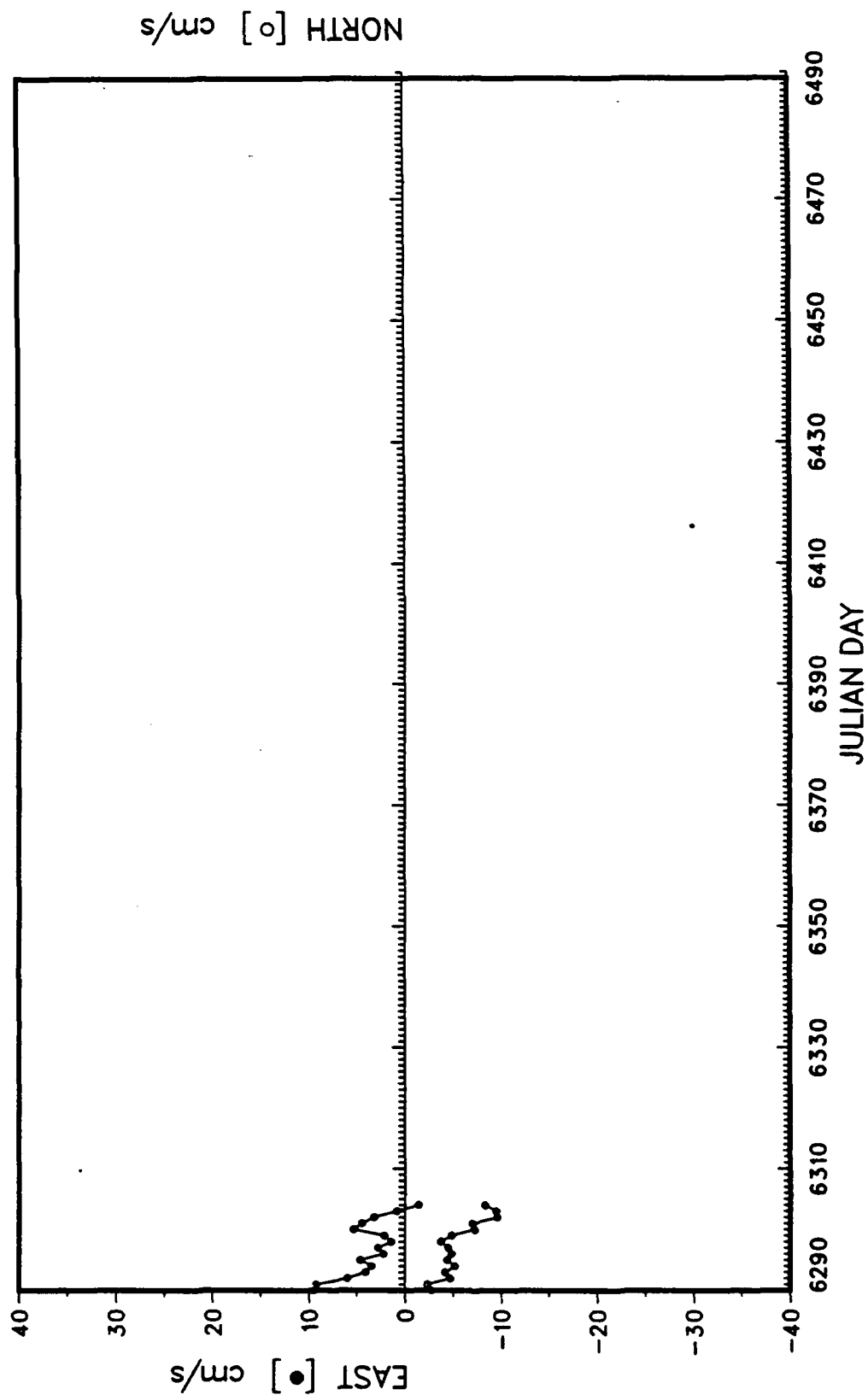


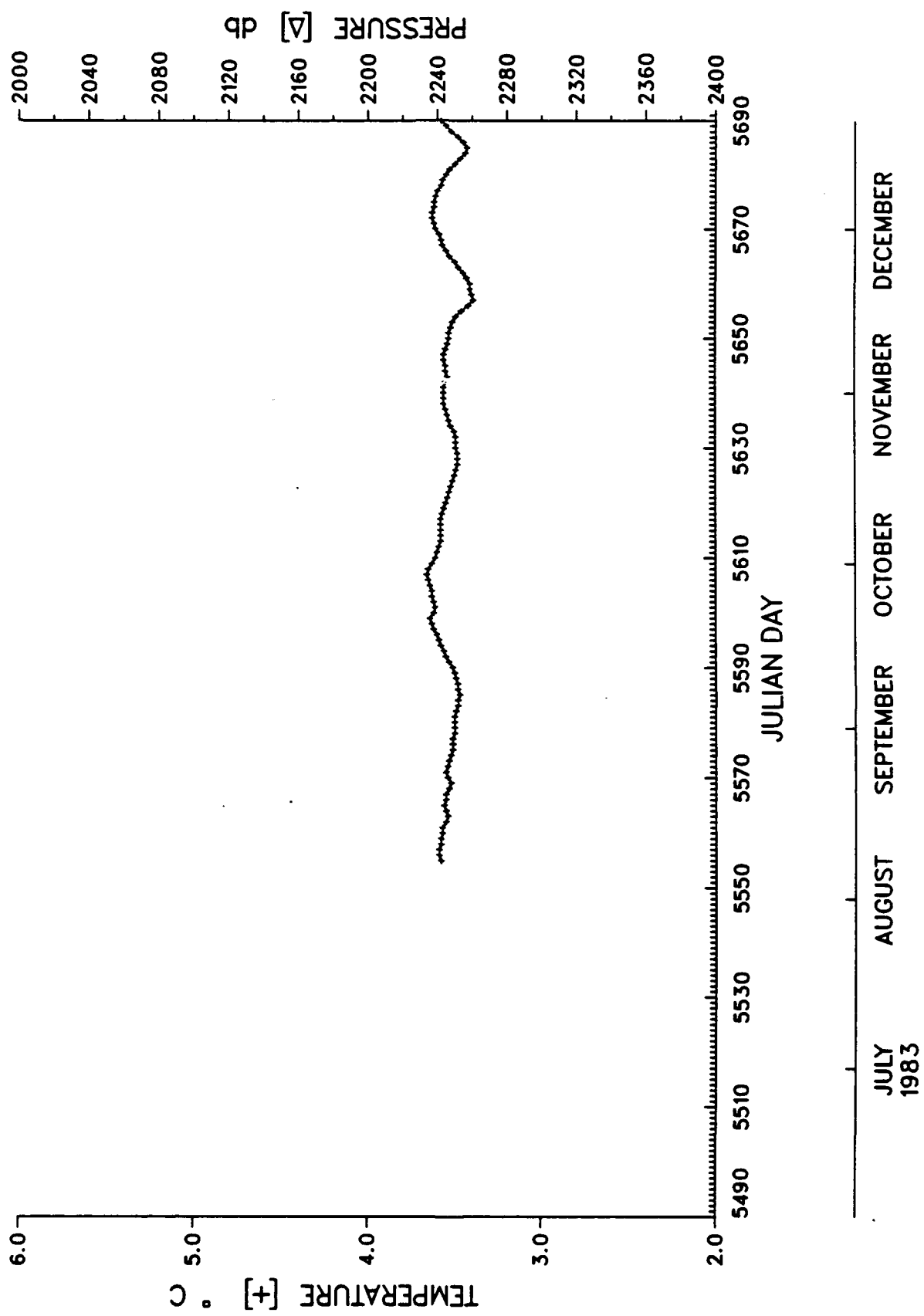
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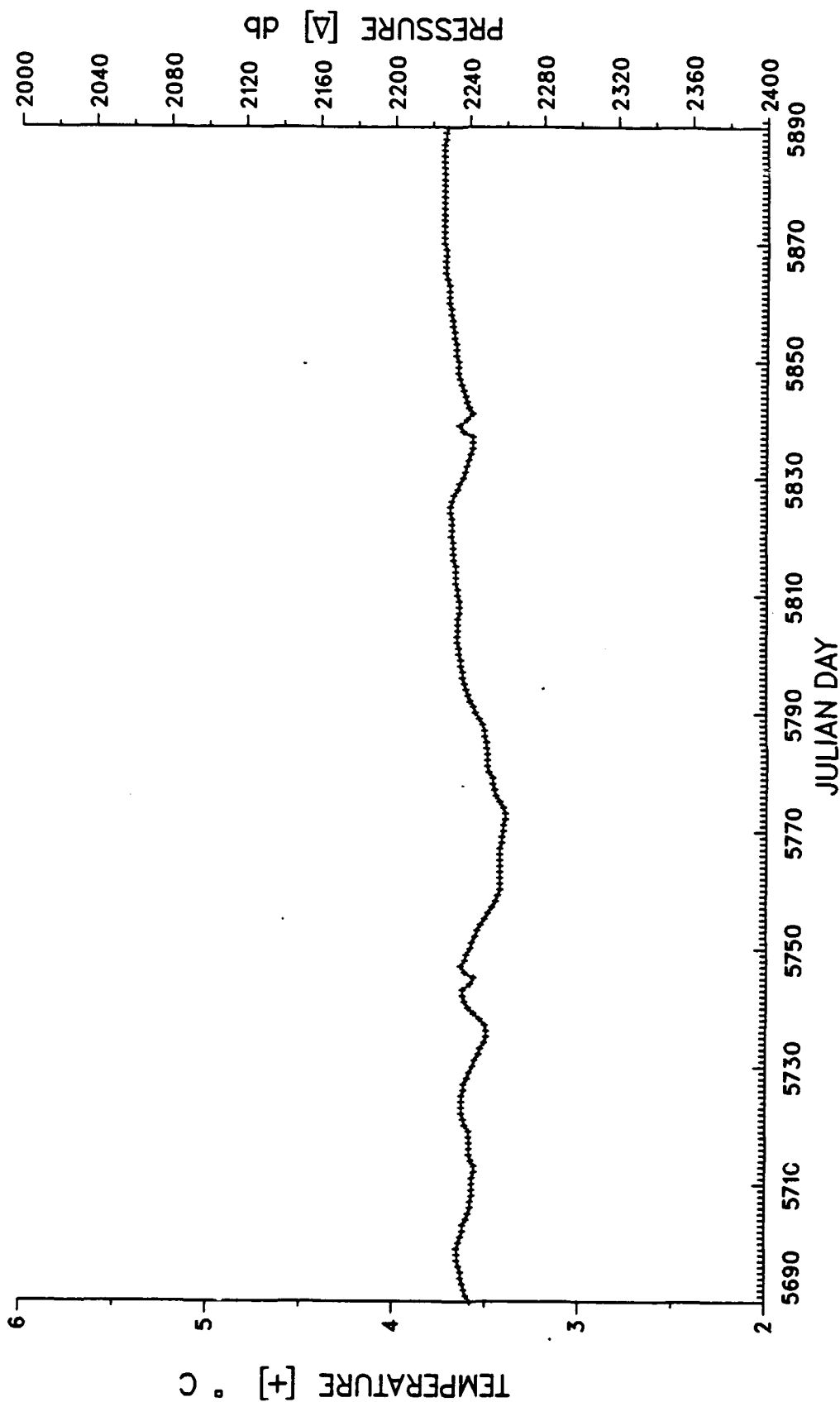


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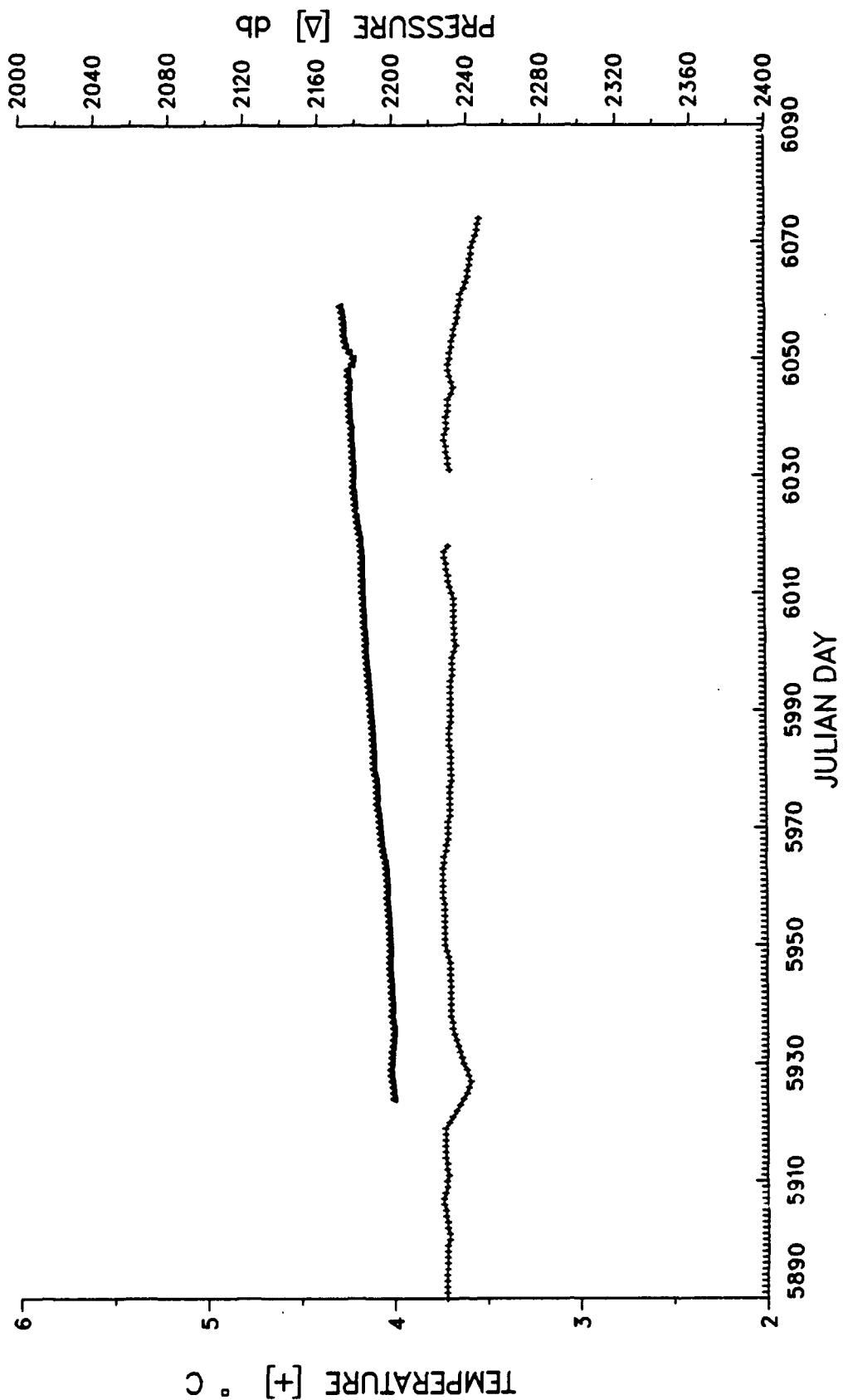




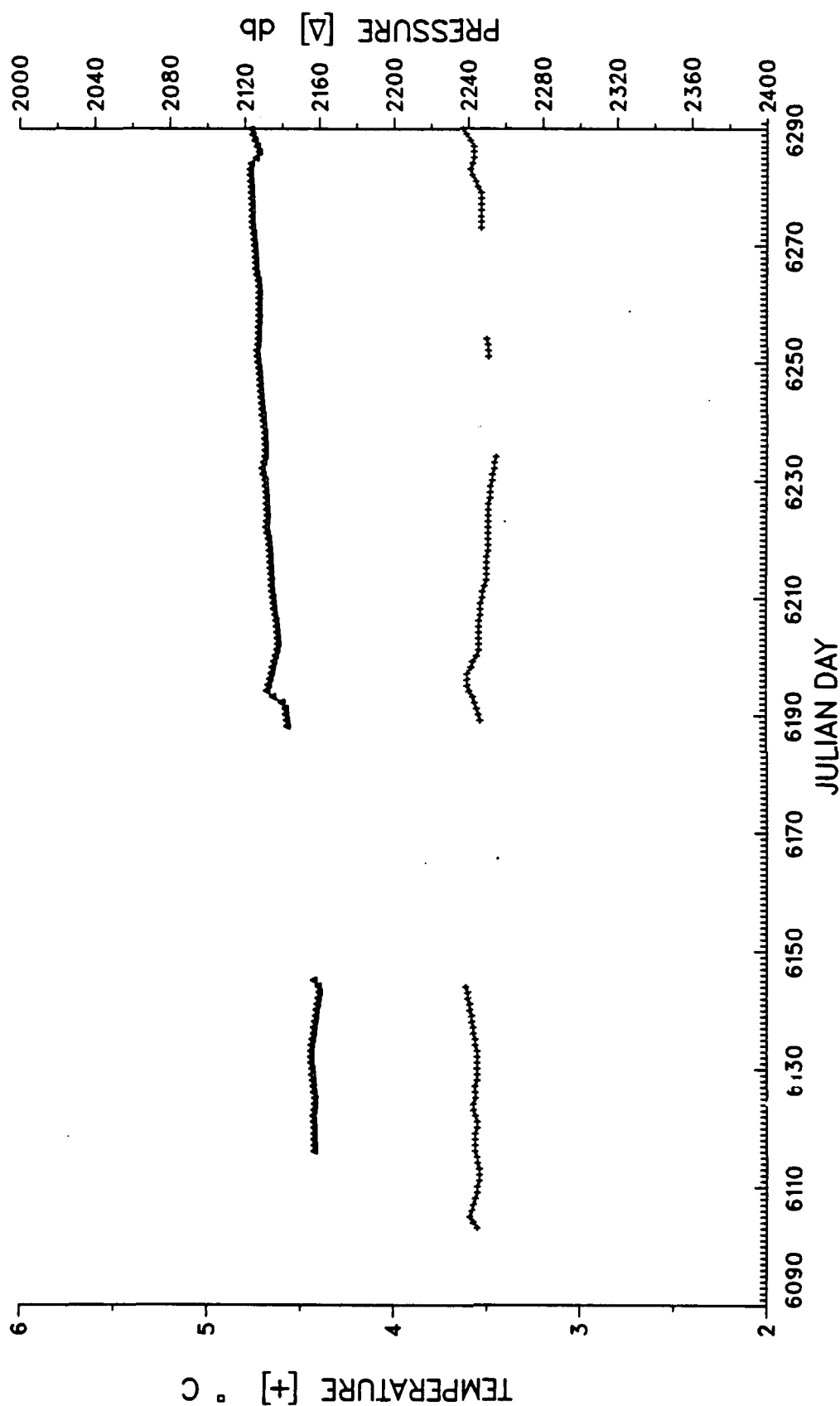
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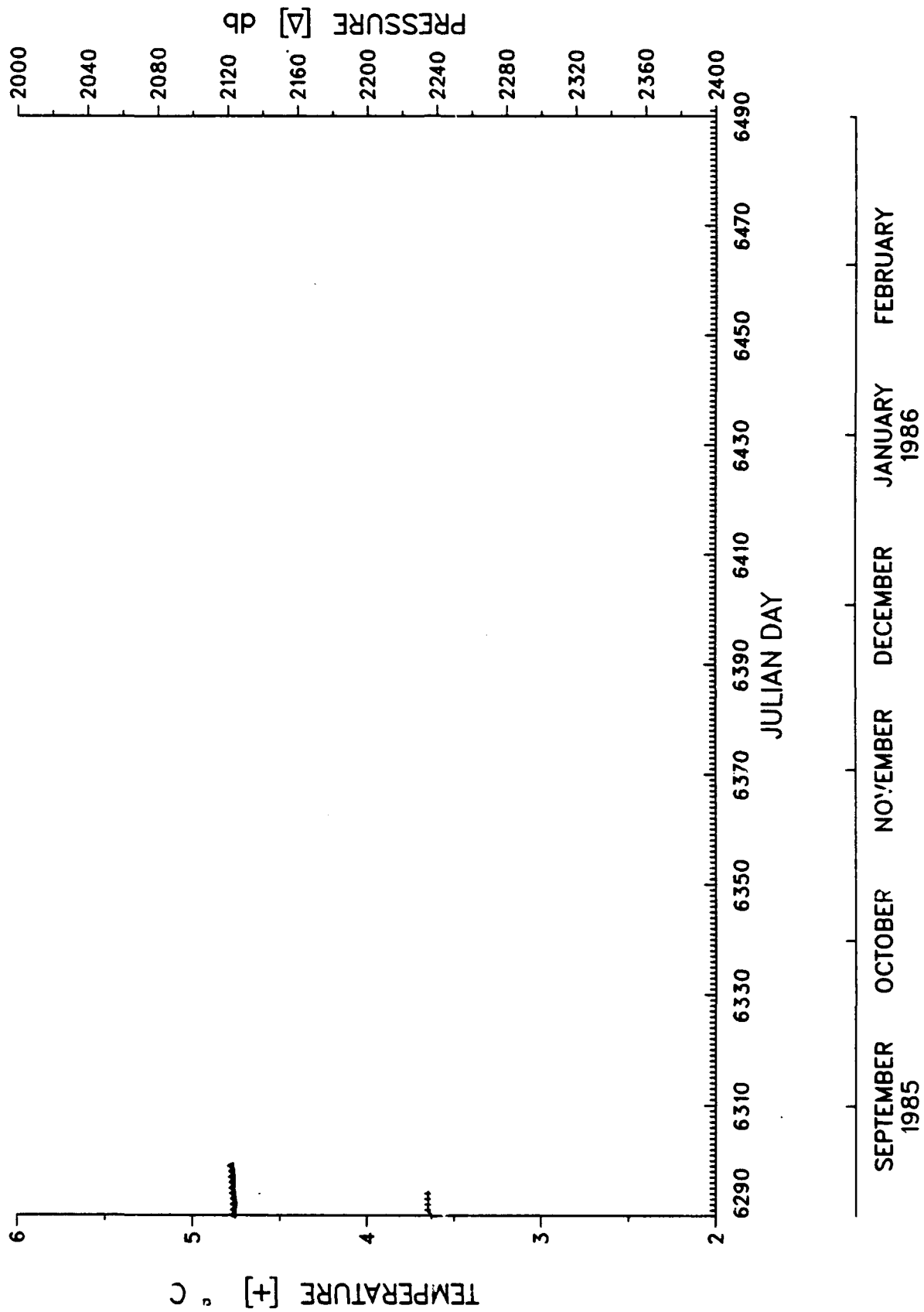
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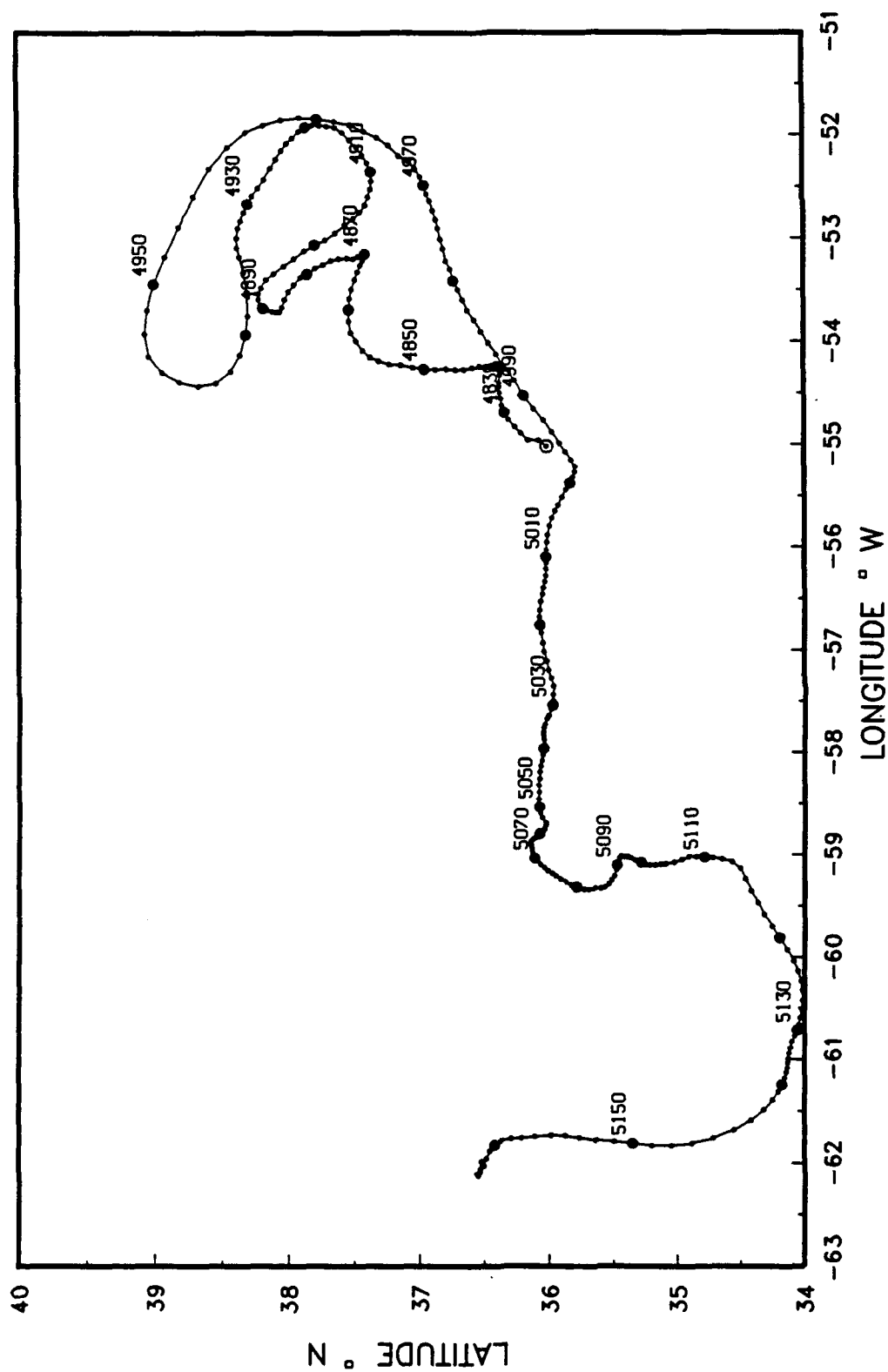


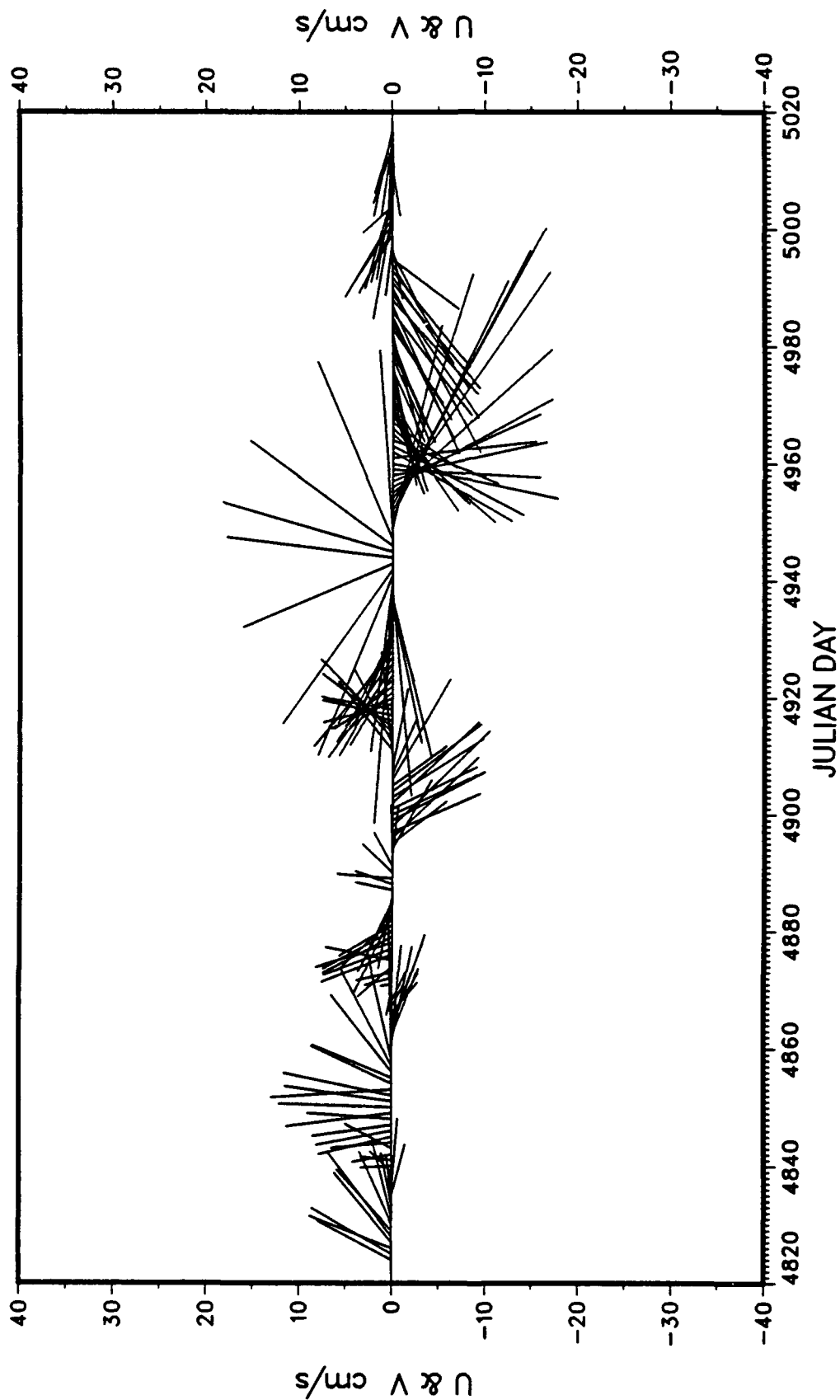
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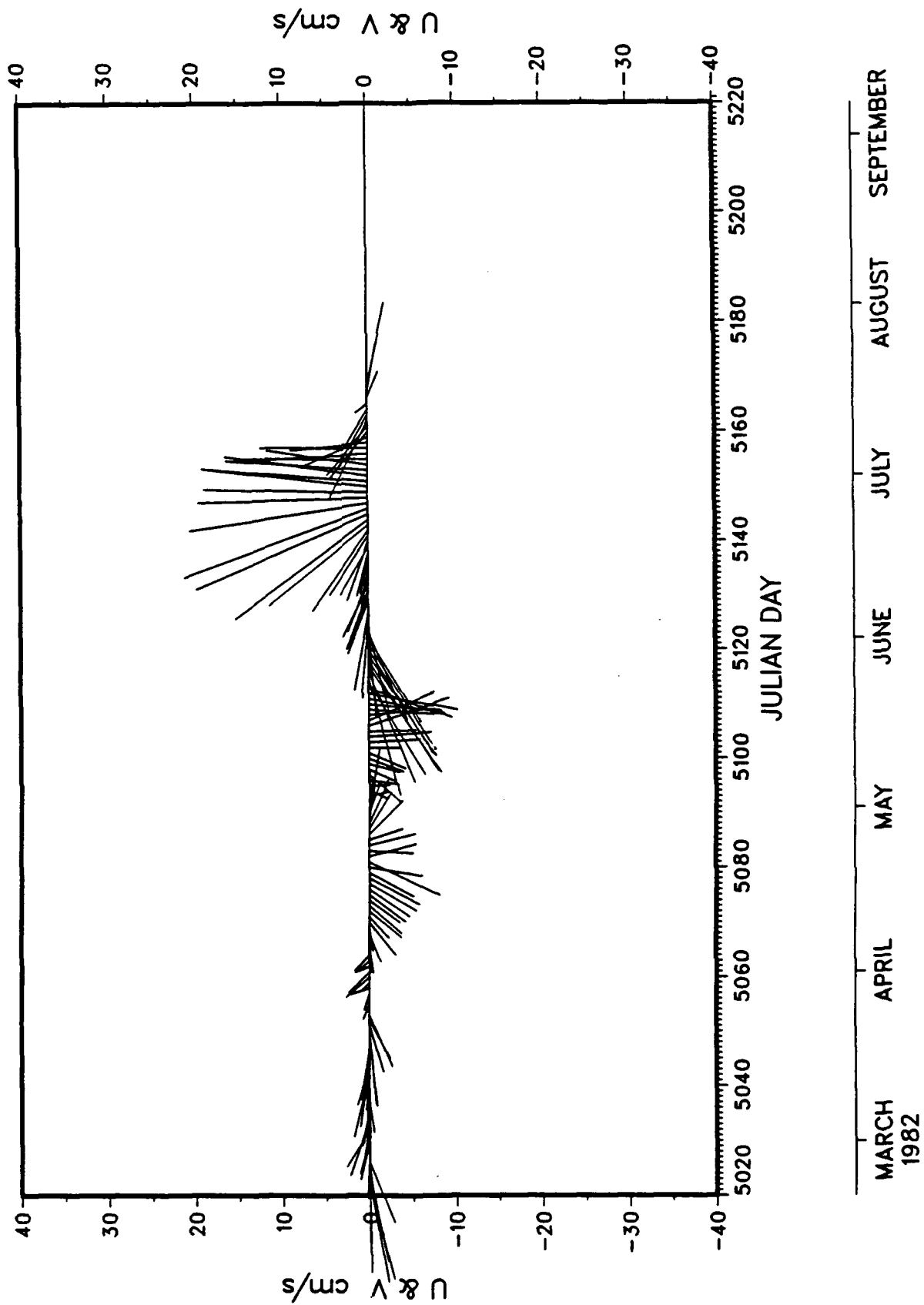
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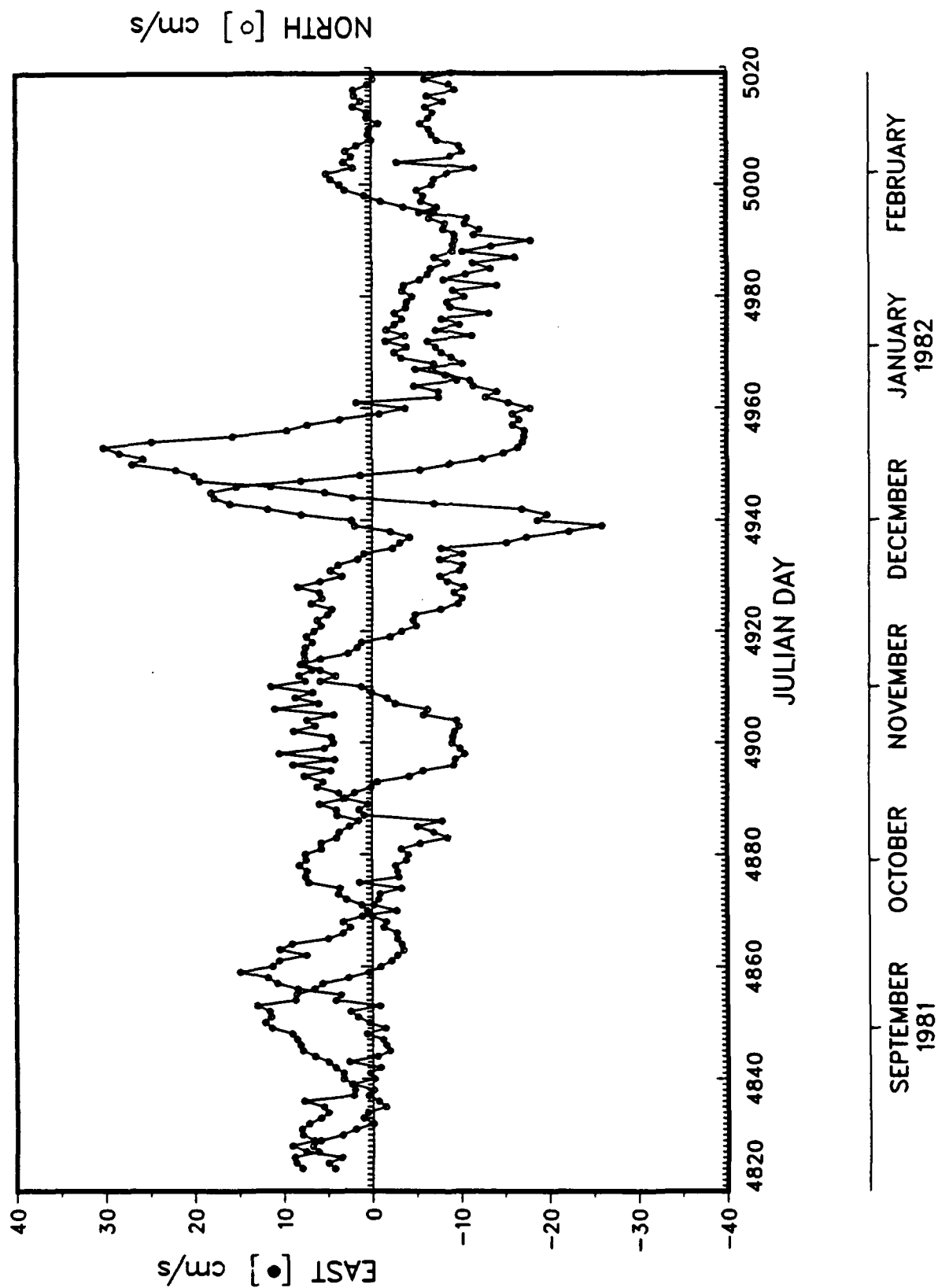


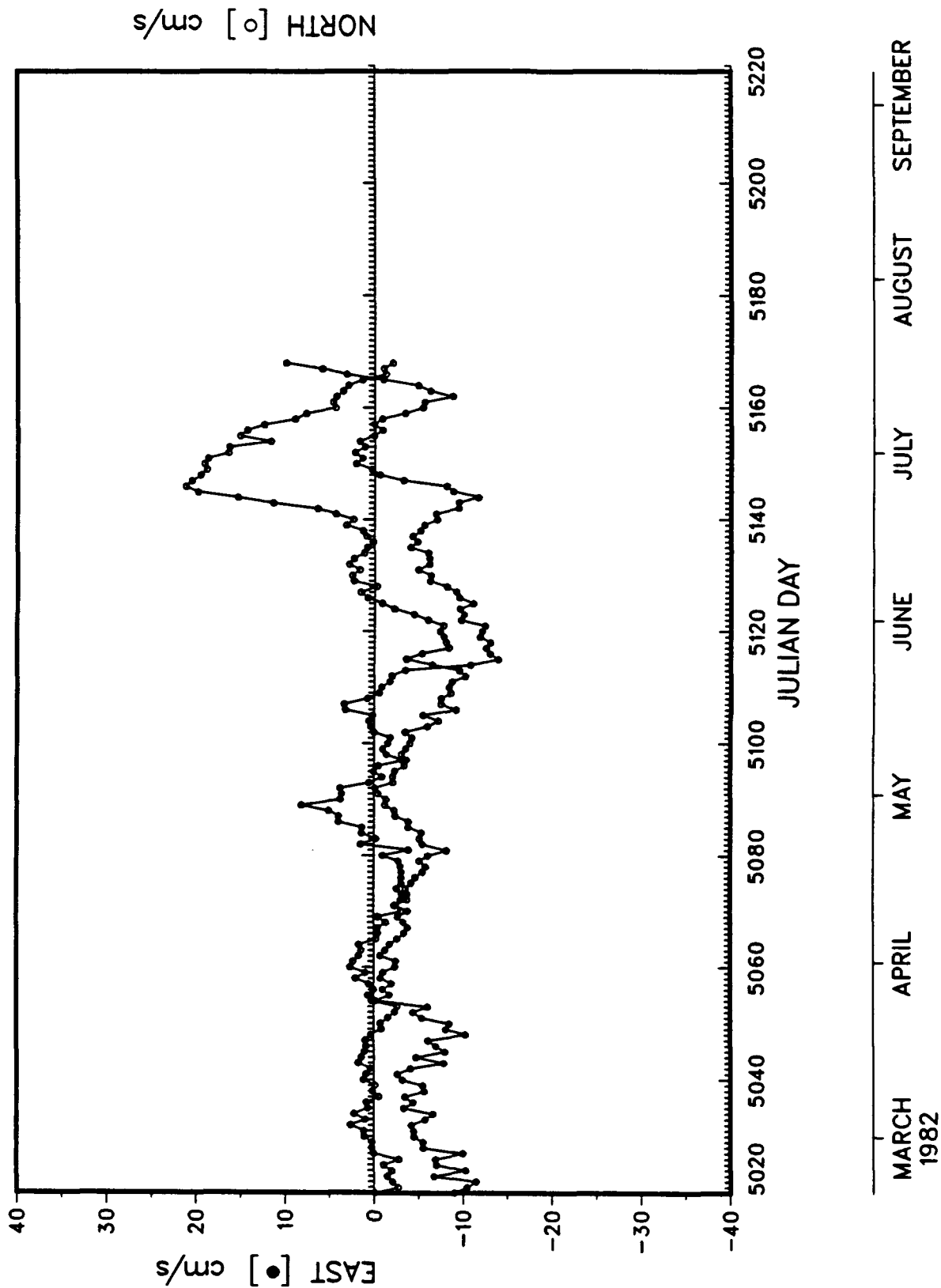


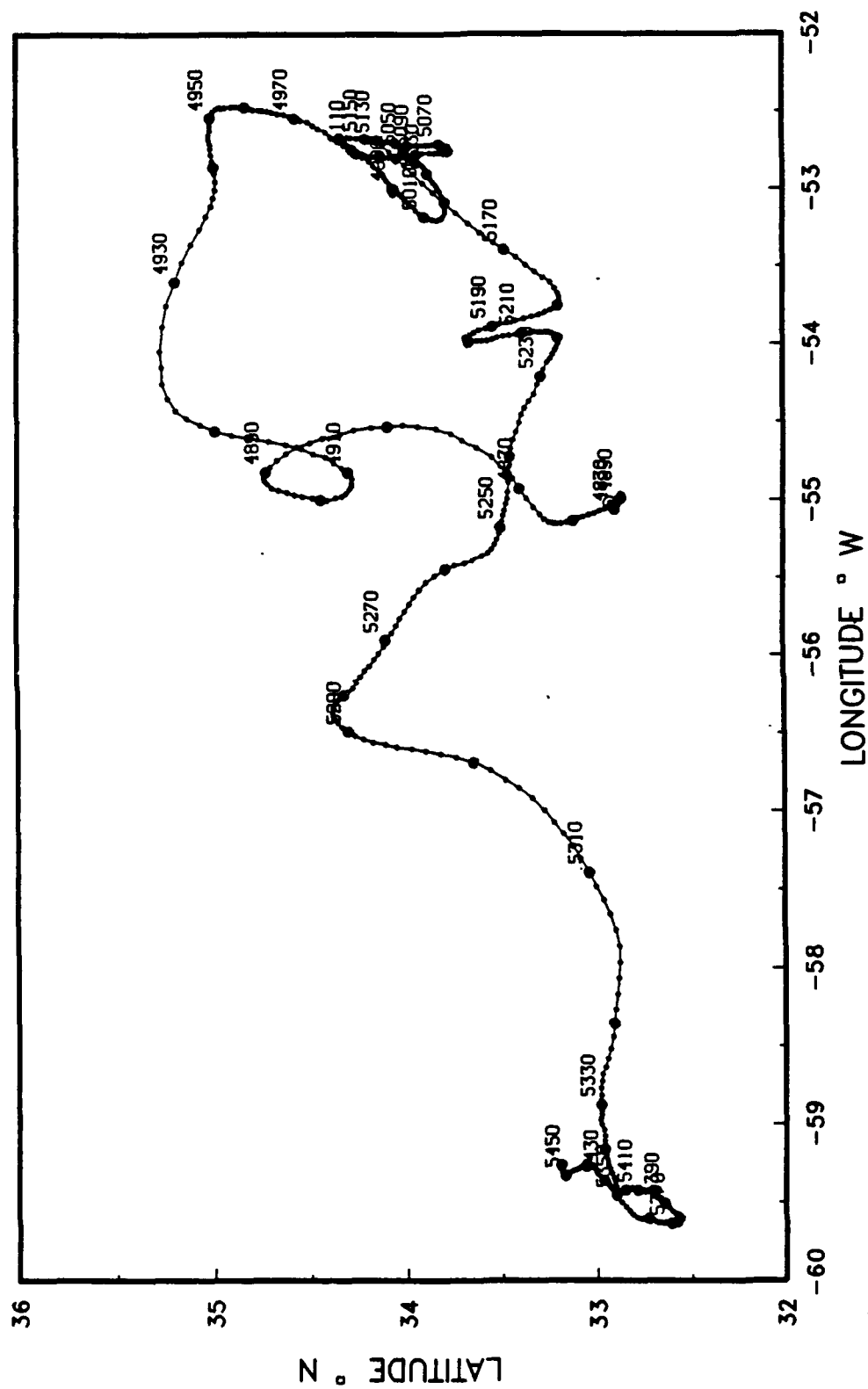


SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

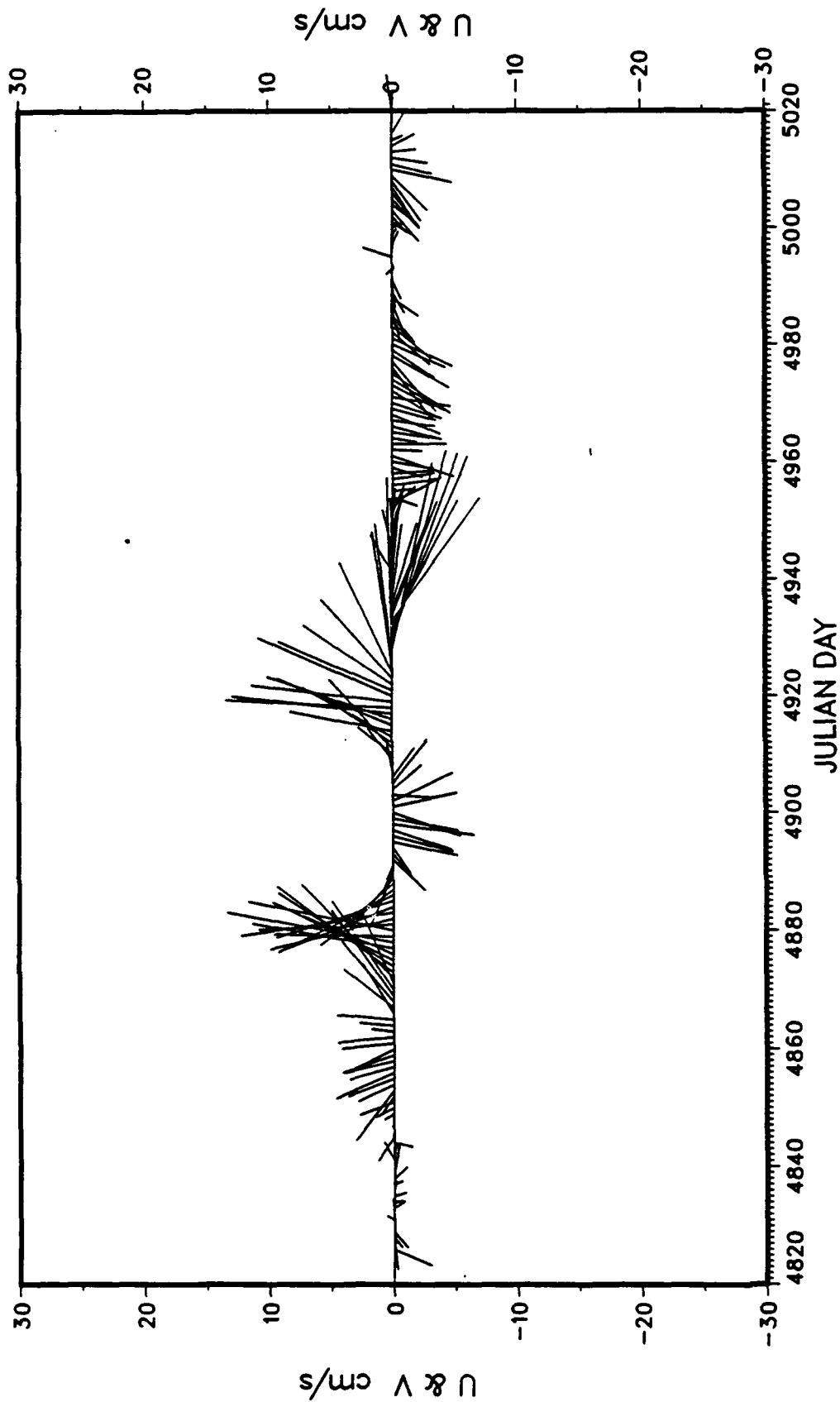




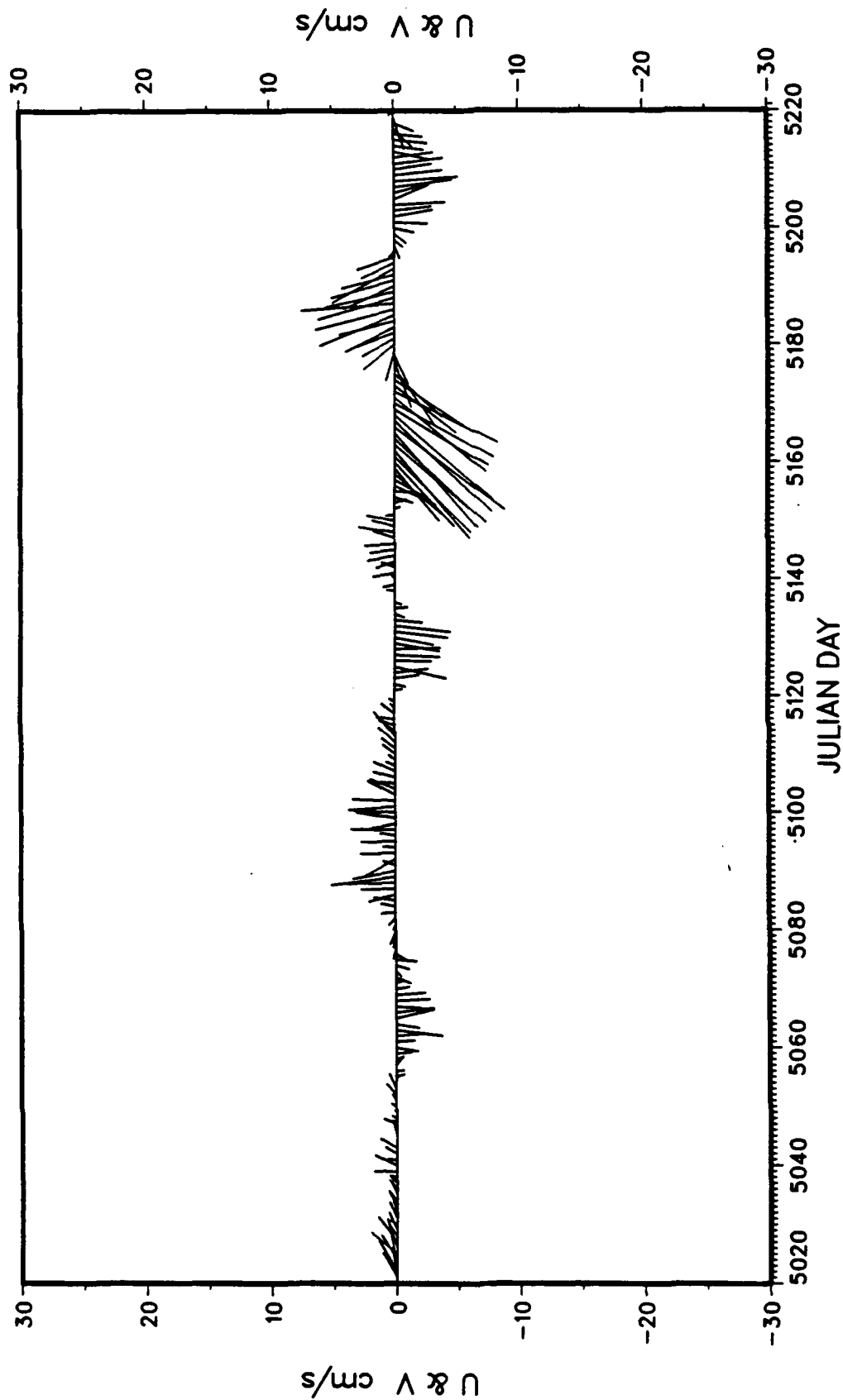




GUSREX 167A

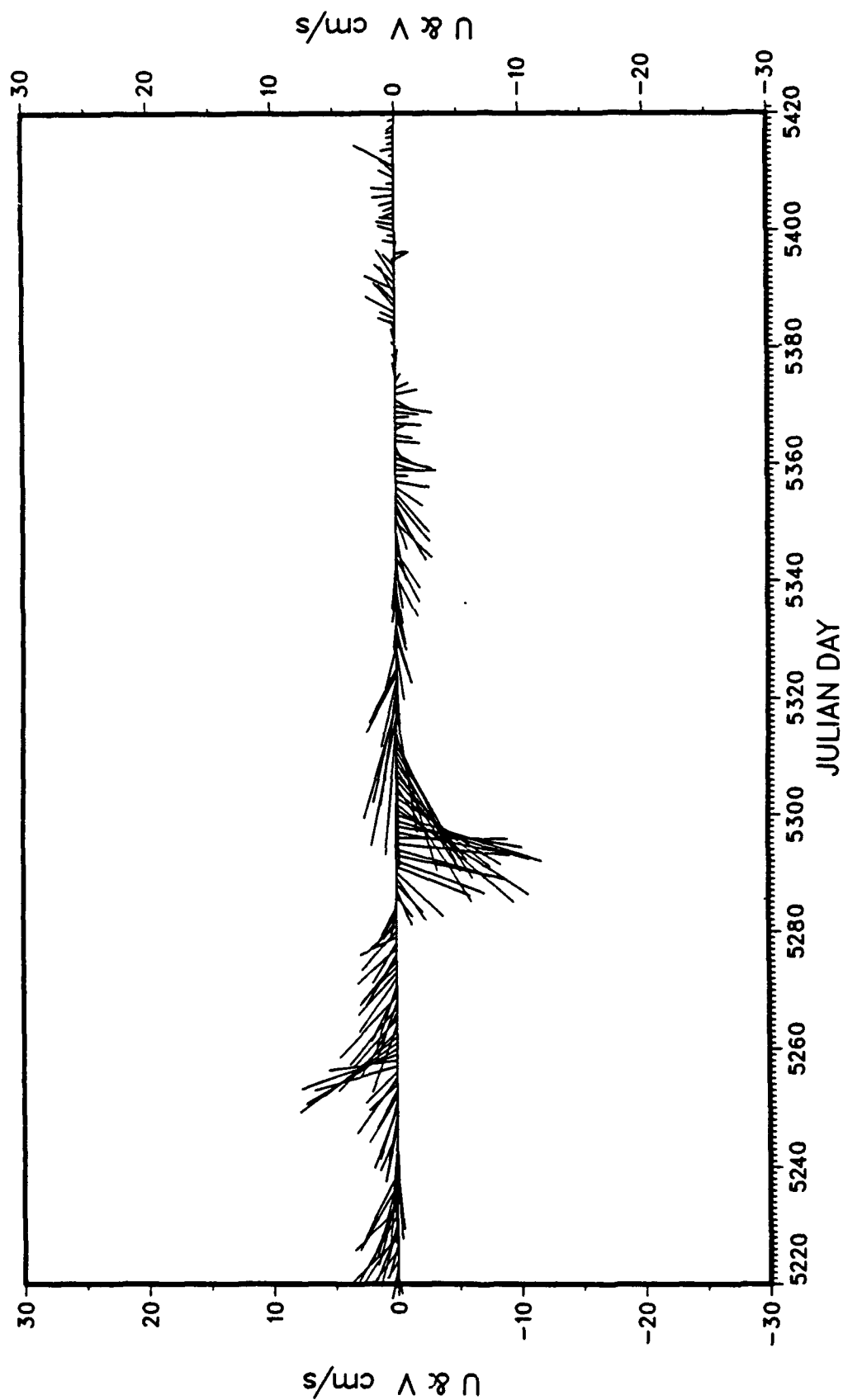


SEPTEMBER 1981 OCTOBER NOVEMBER DECEMBER JANUARY 1982 FEBRUARY

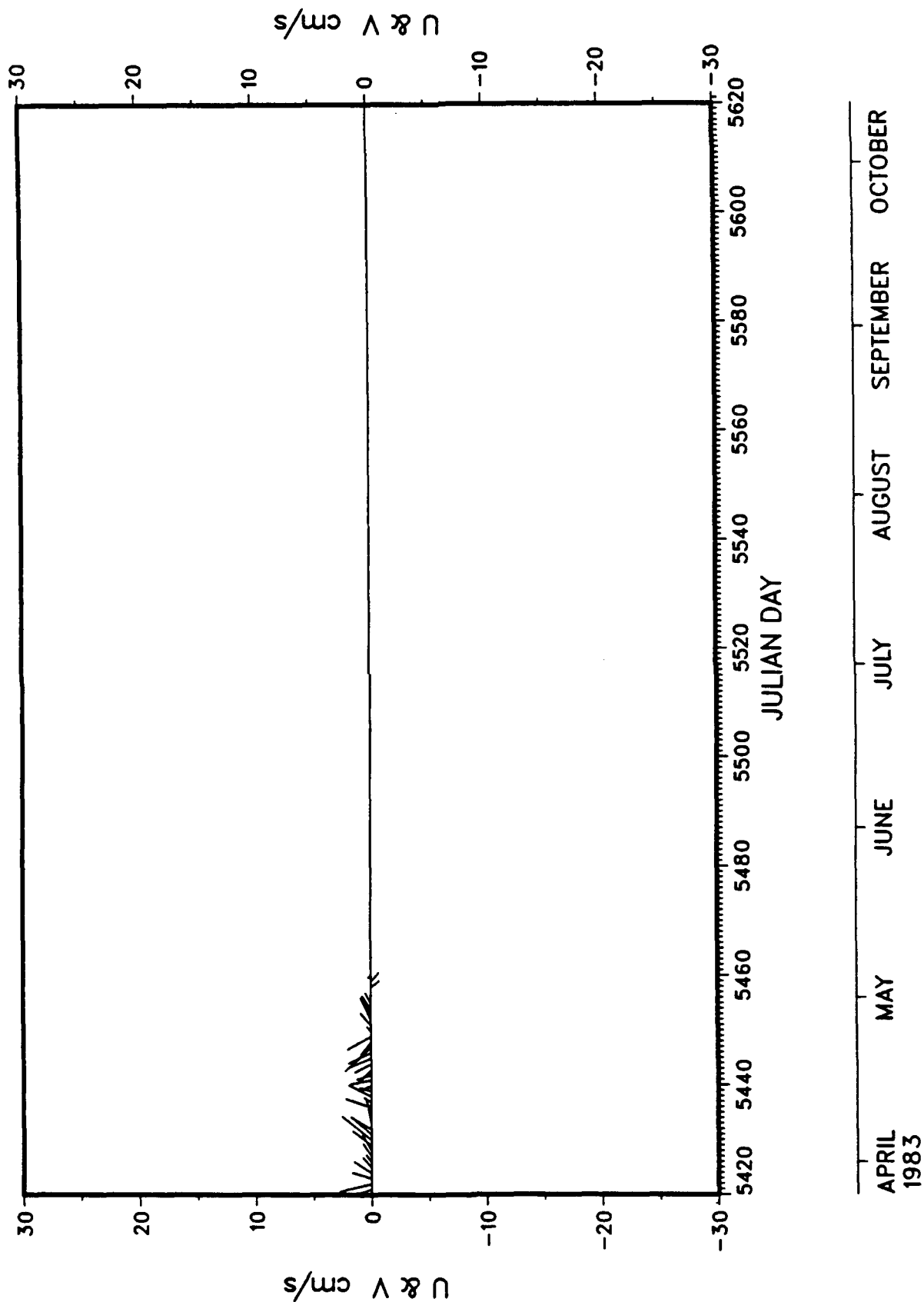


MARCH 1982 APRIL MAY JUNE JULY AUGUST SEPTEMBER

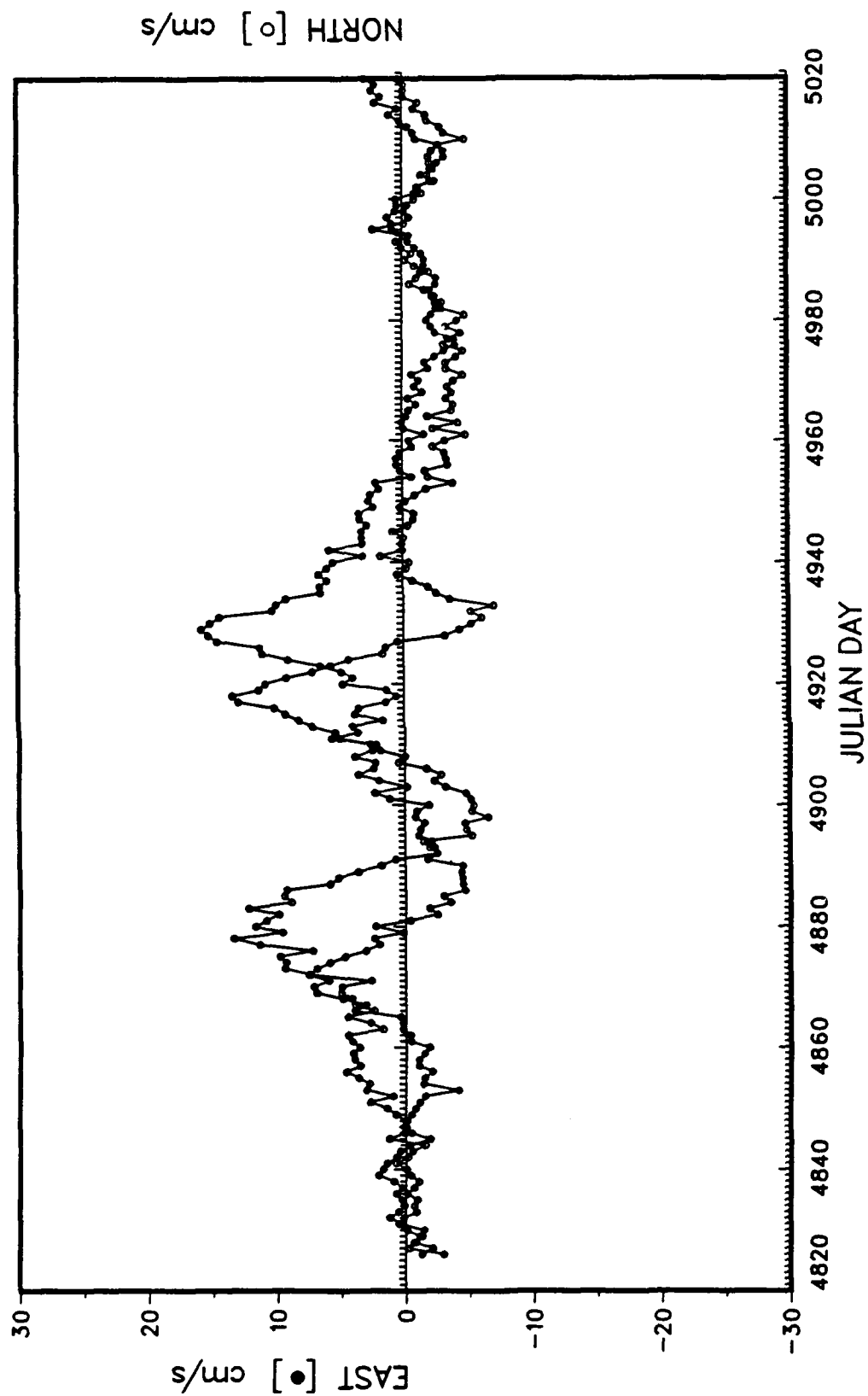
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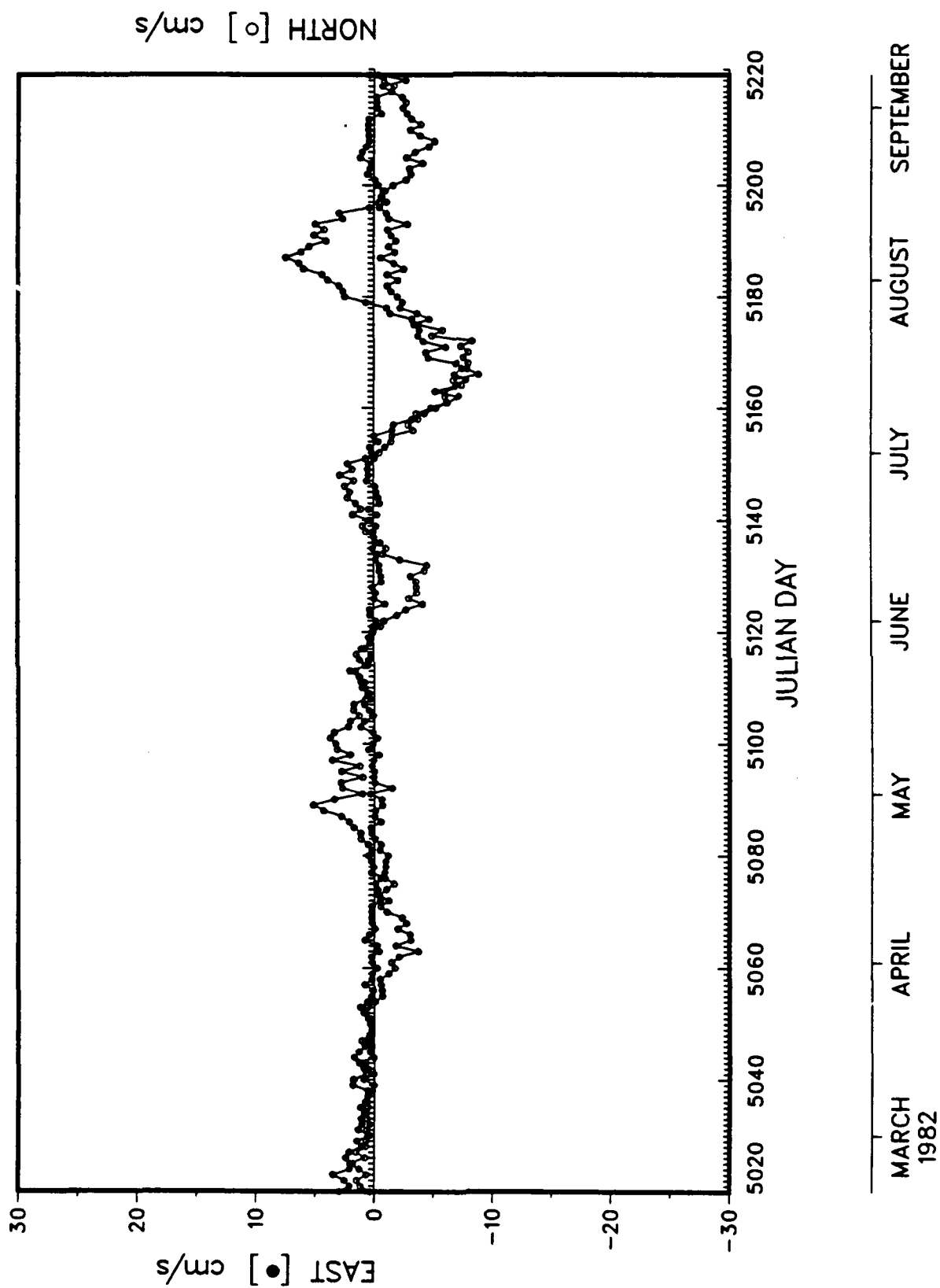


OCTOBER 1982 NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

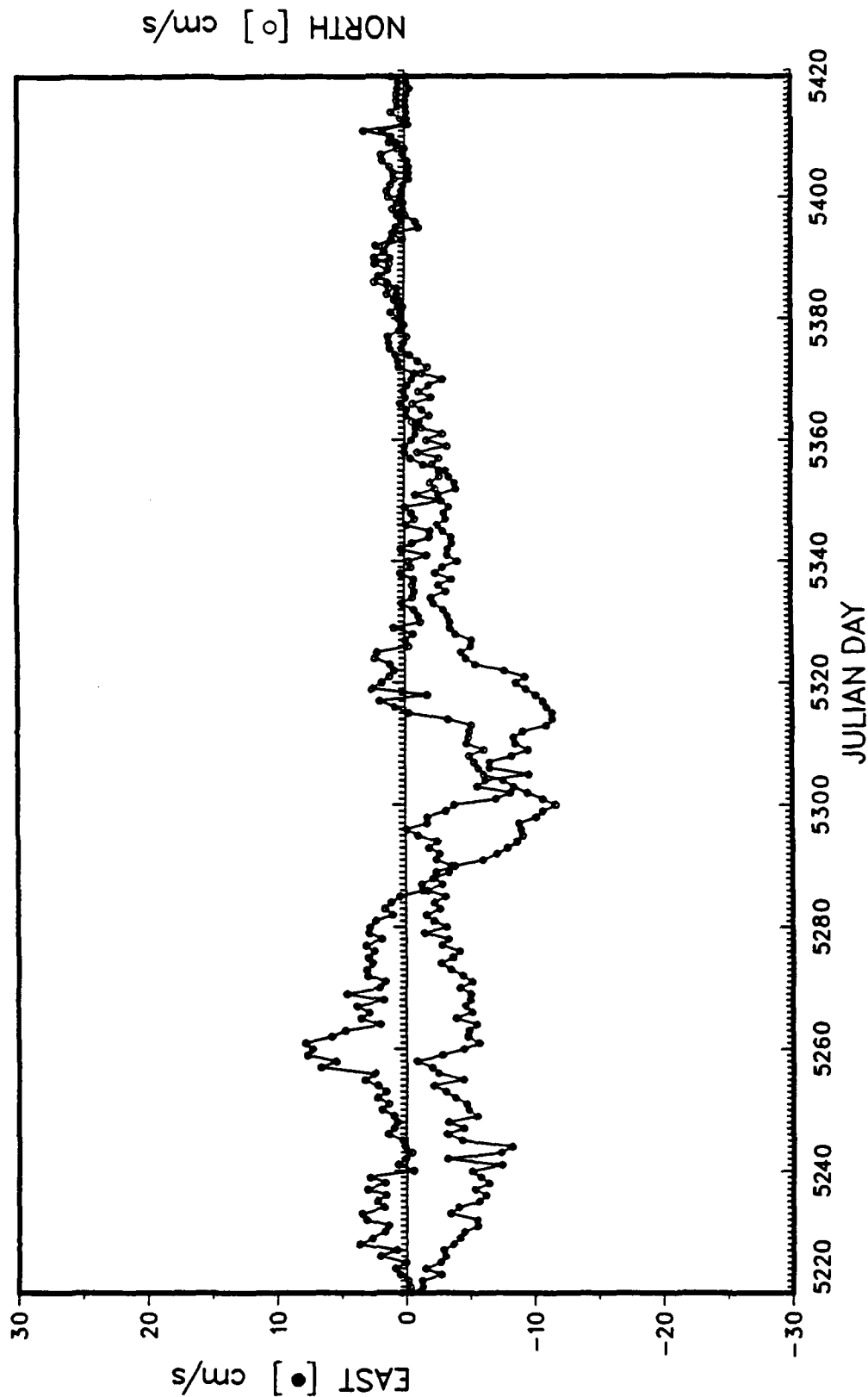


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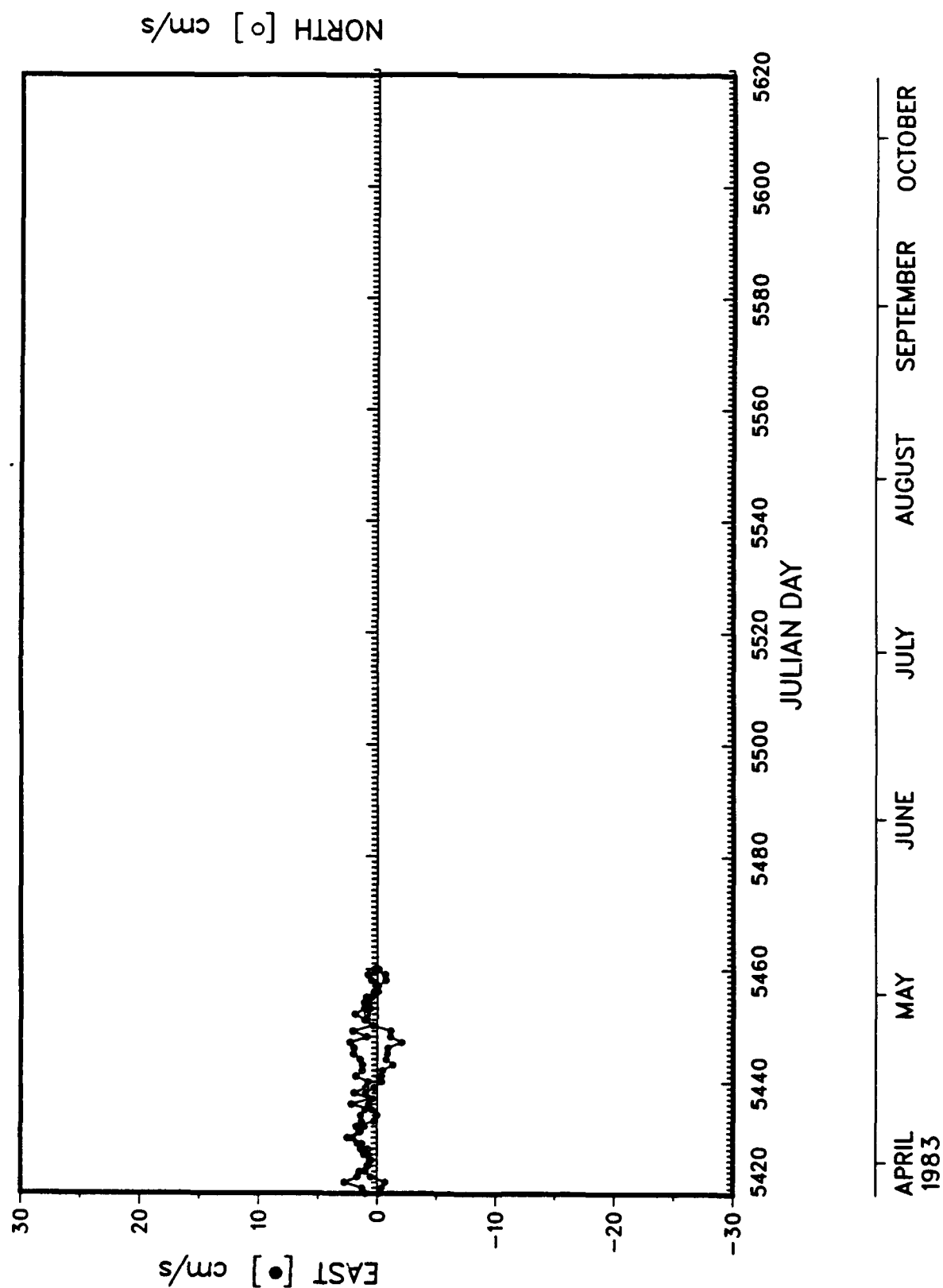


GUSREX . 167A

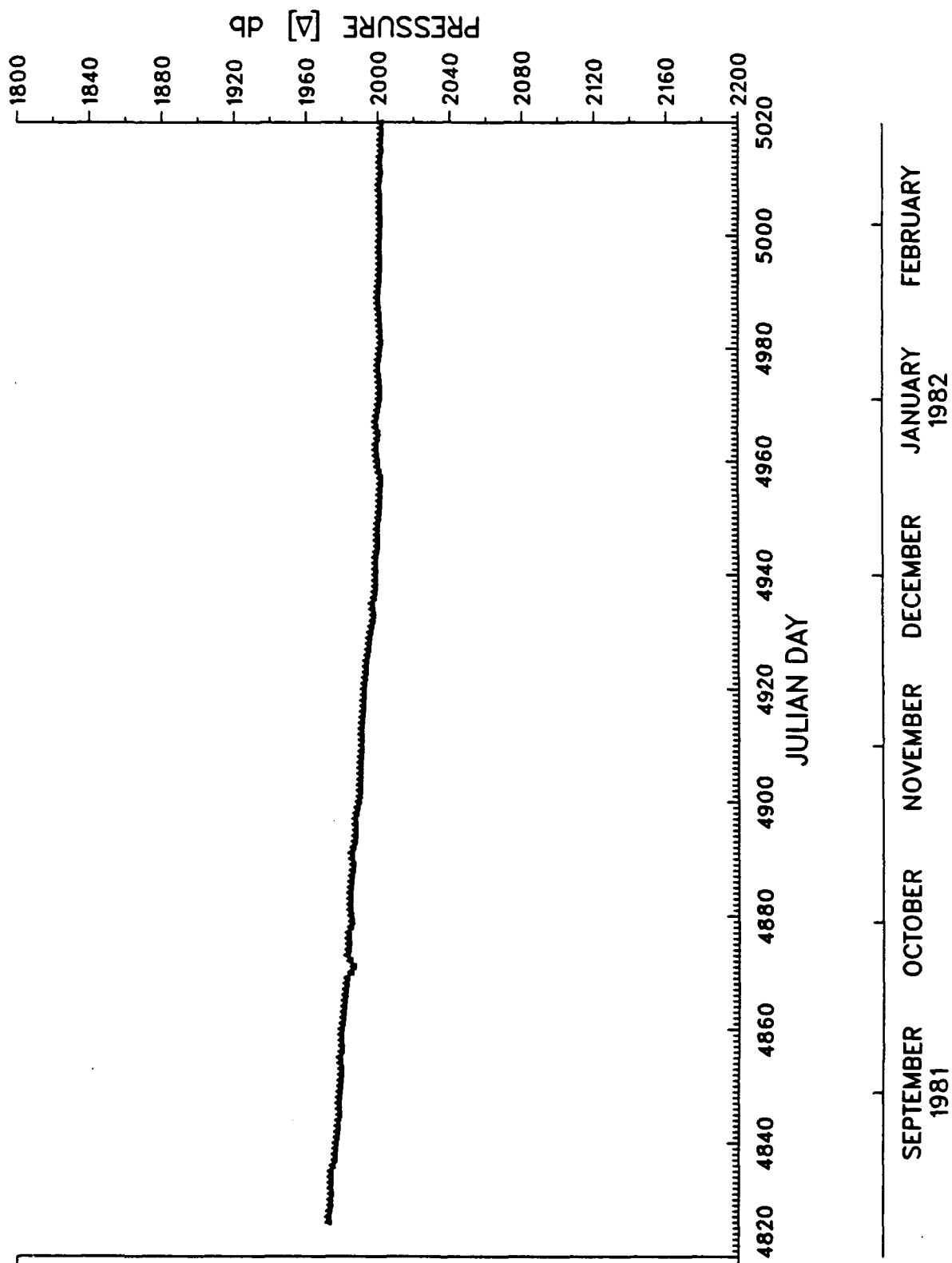


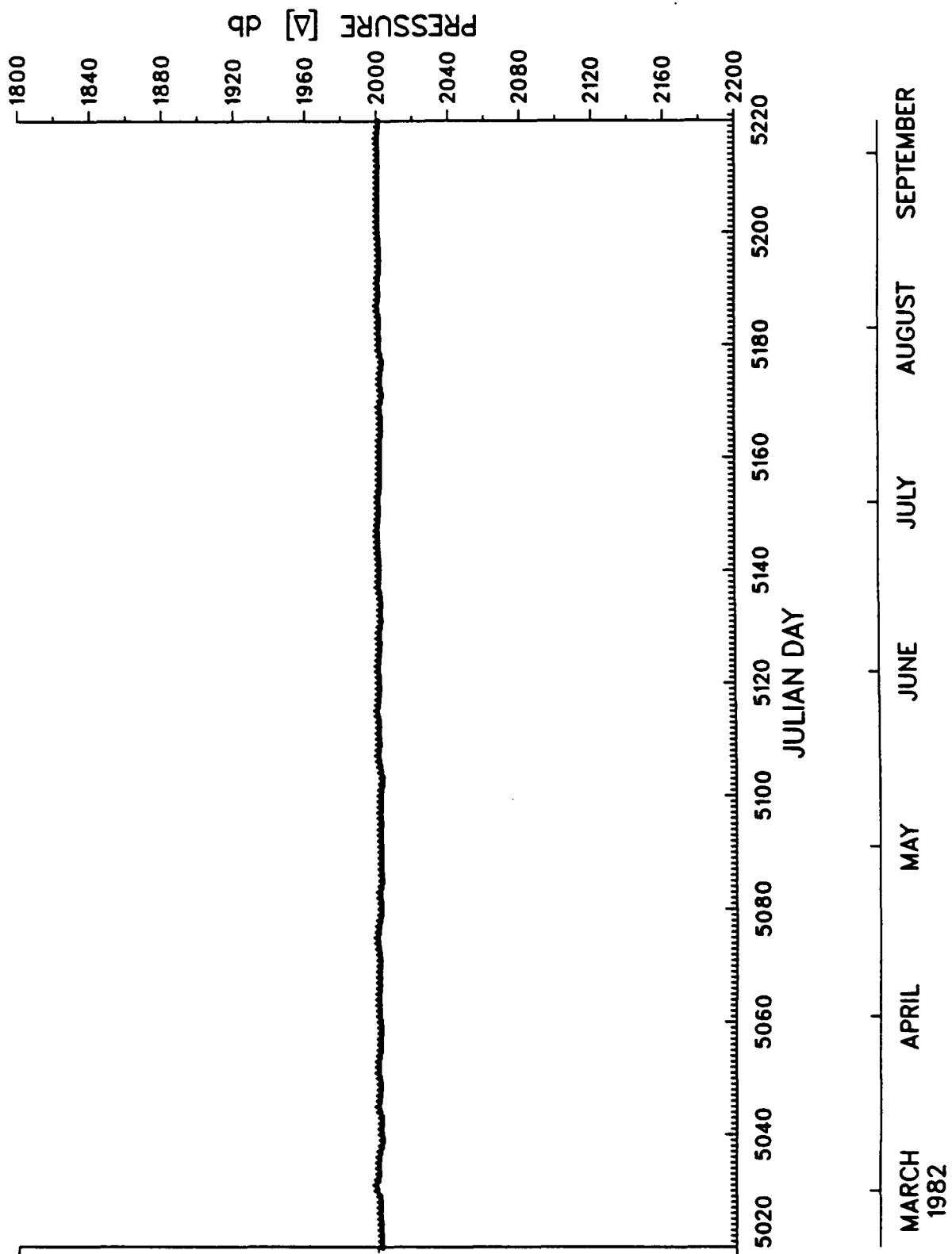
OCTOBER 1982 NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

GUSREX 167A

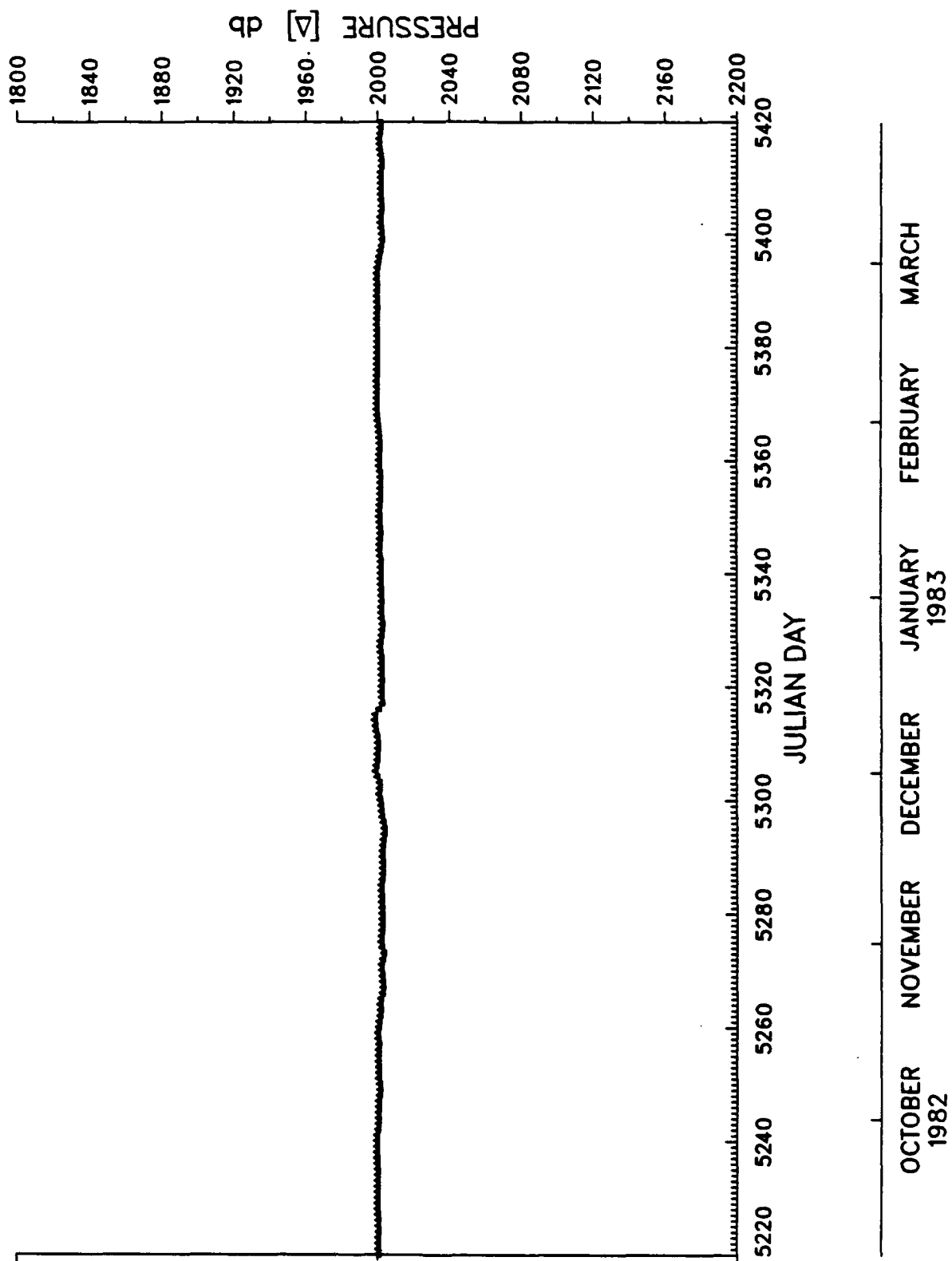


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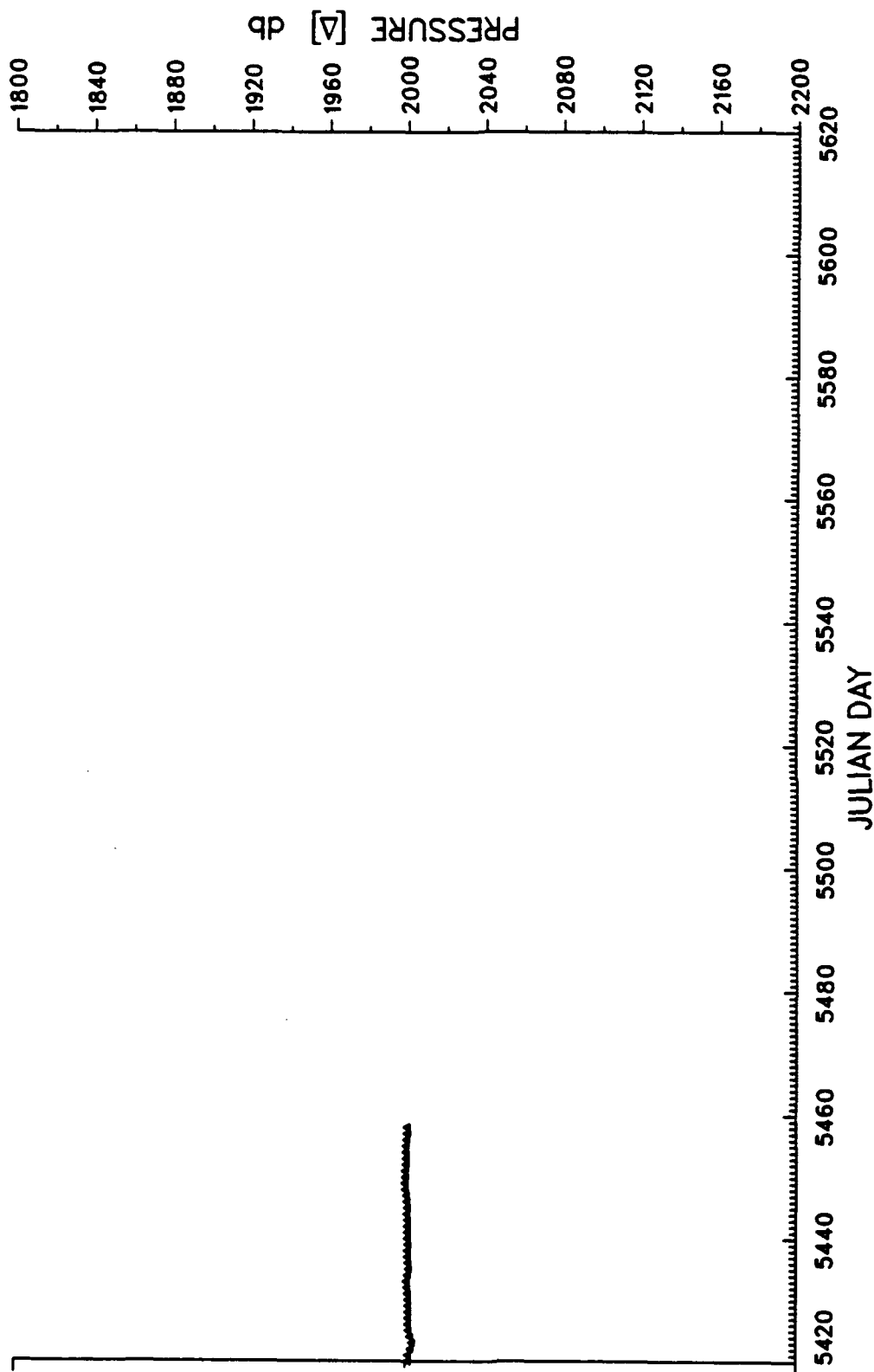




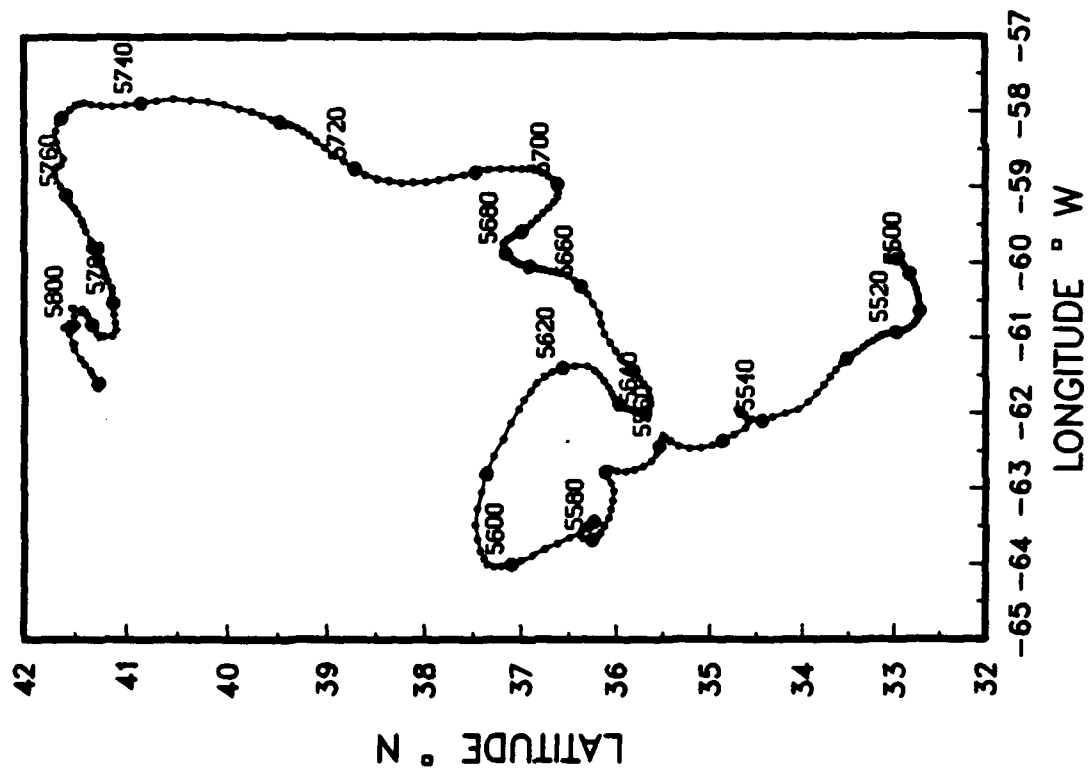
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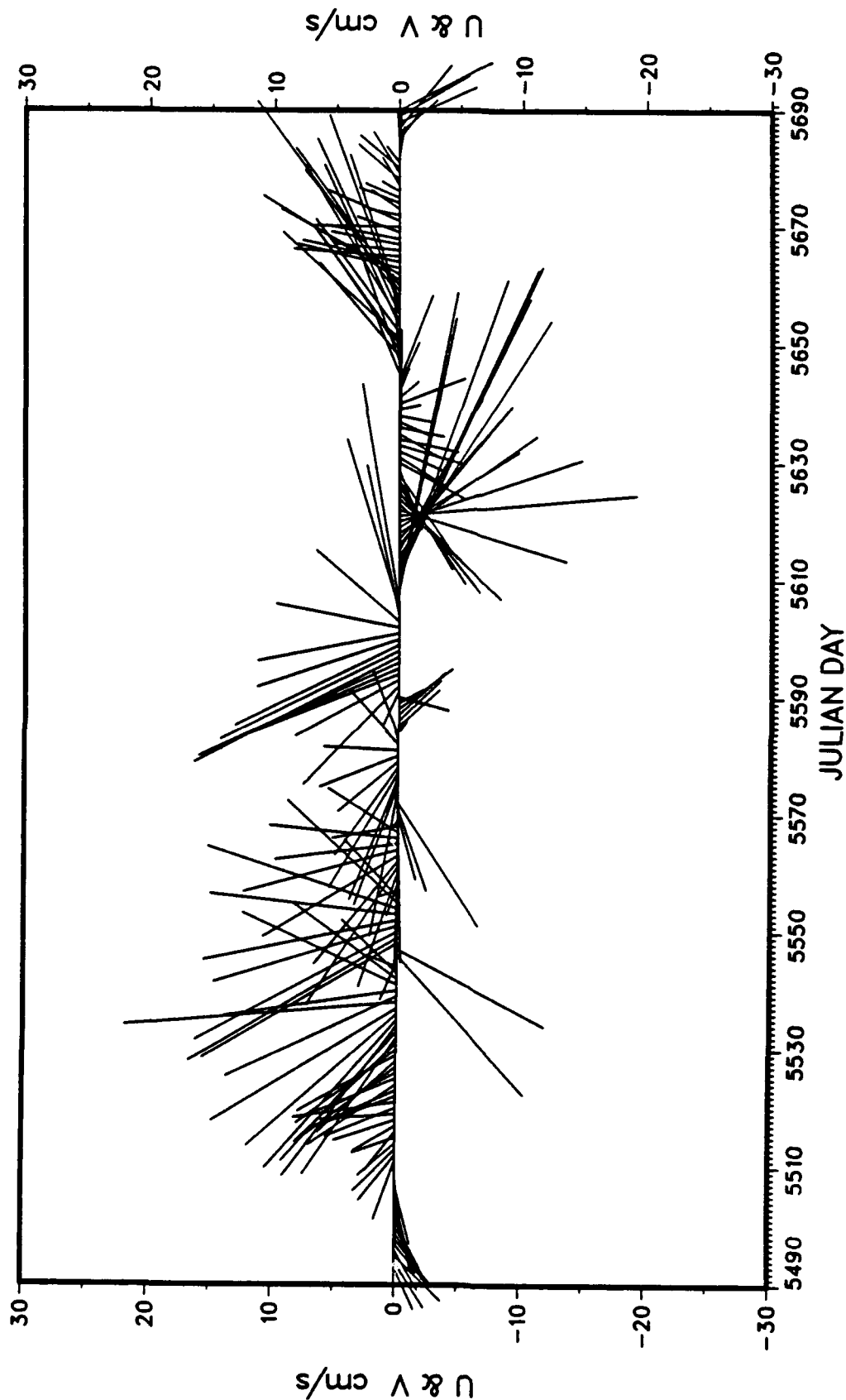


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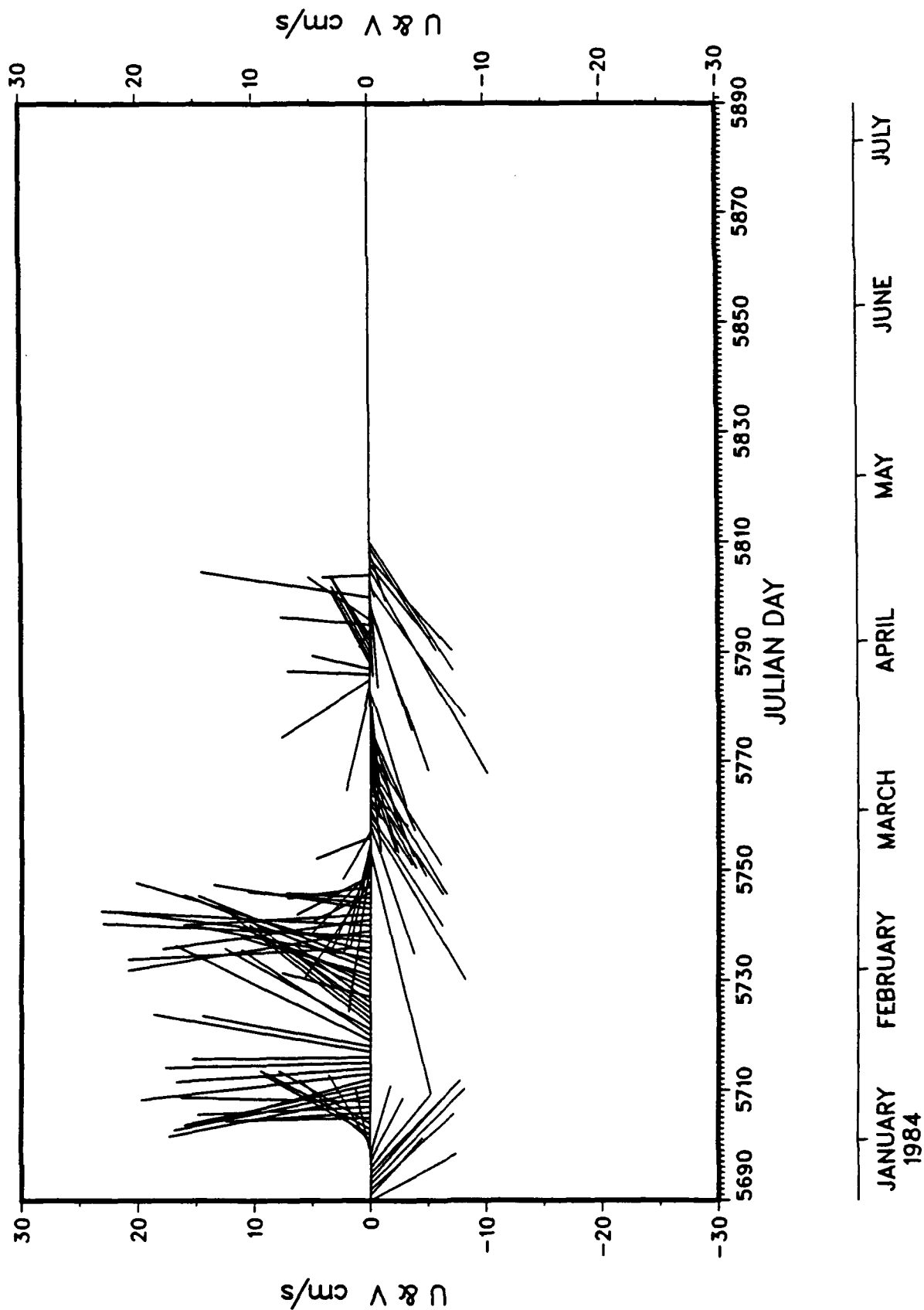
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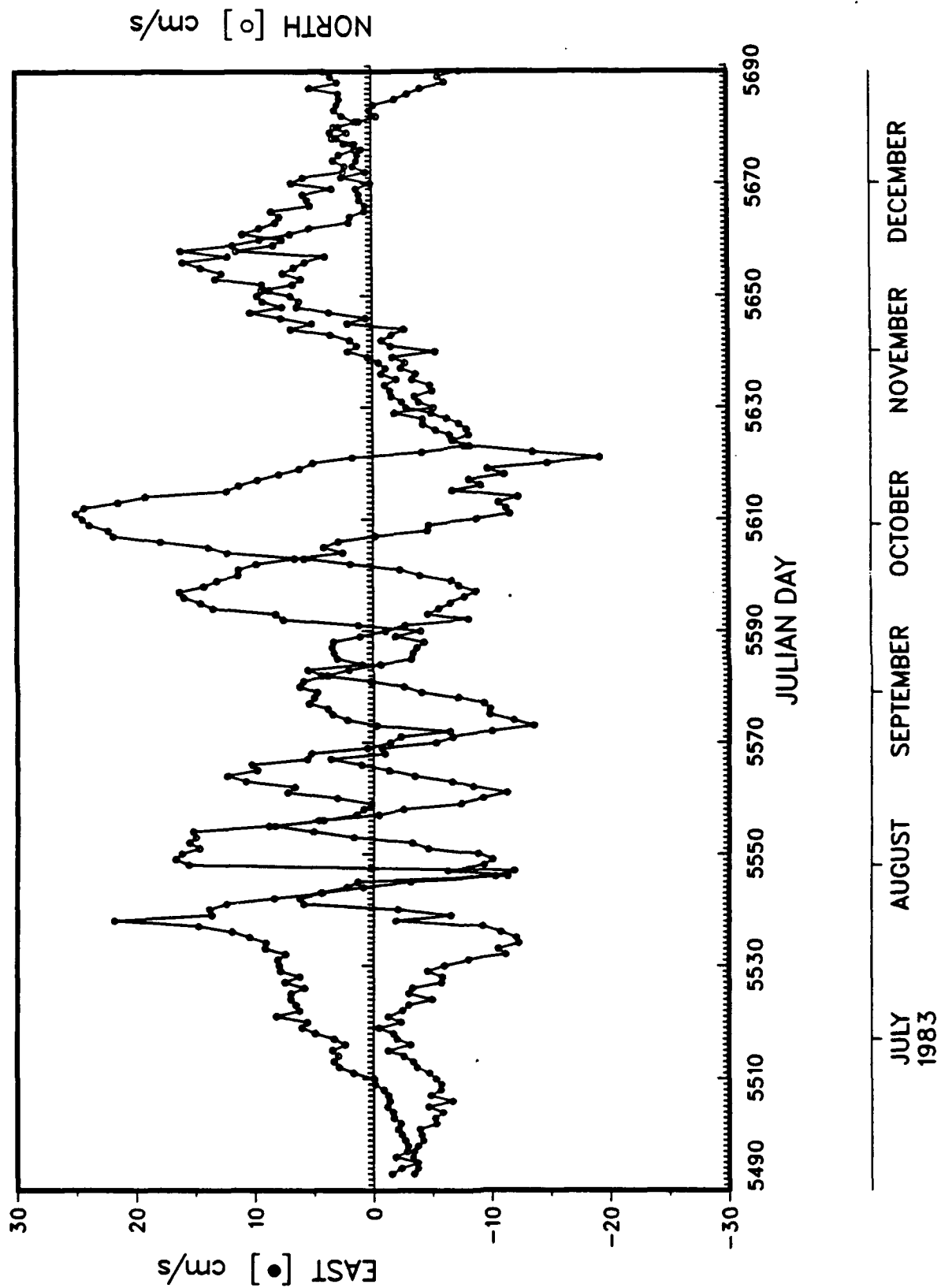


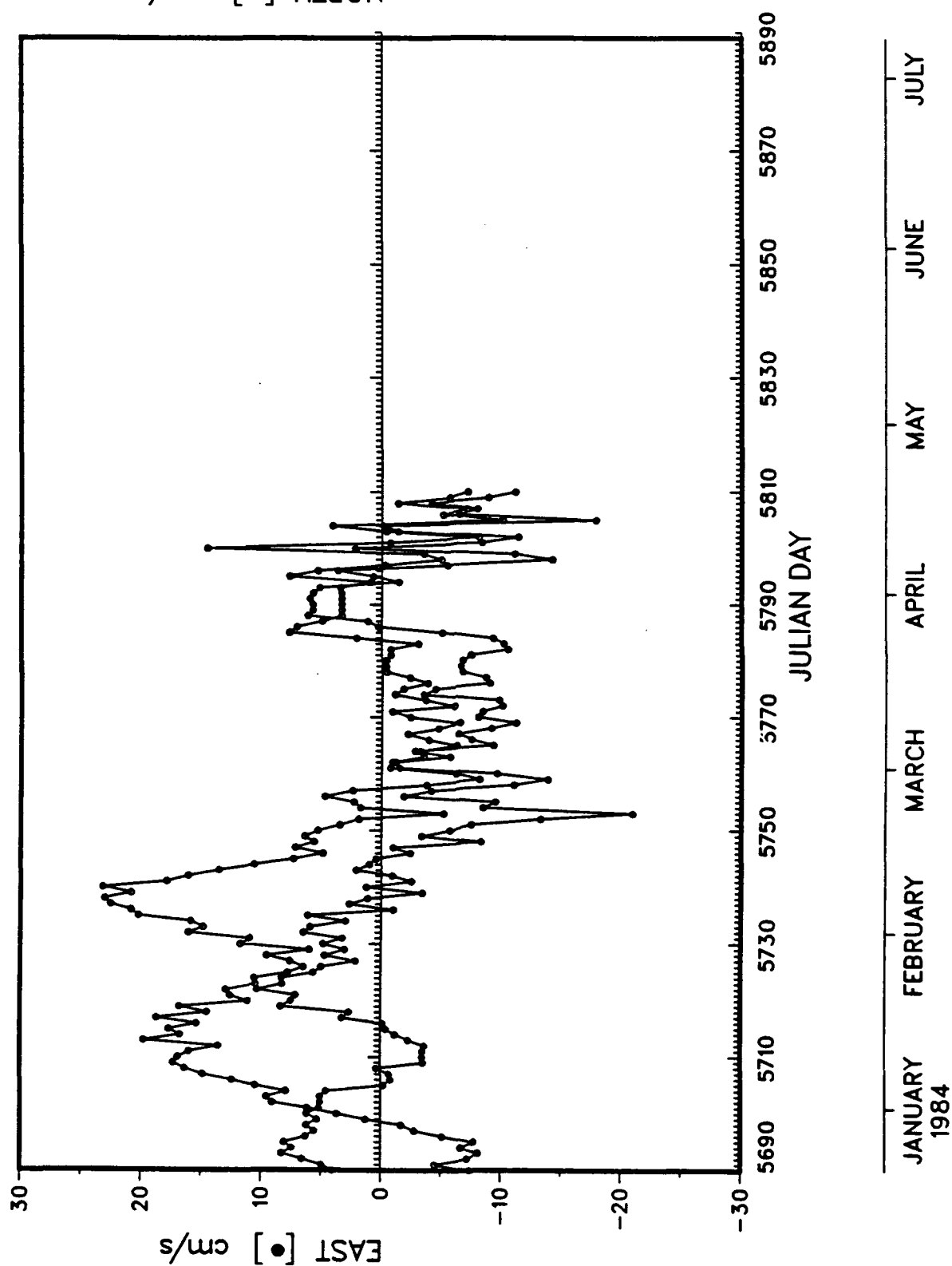


JULY 1983 AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

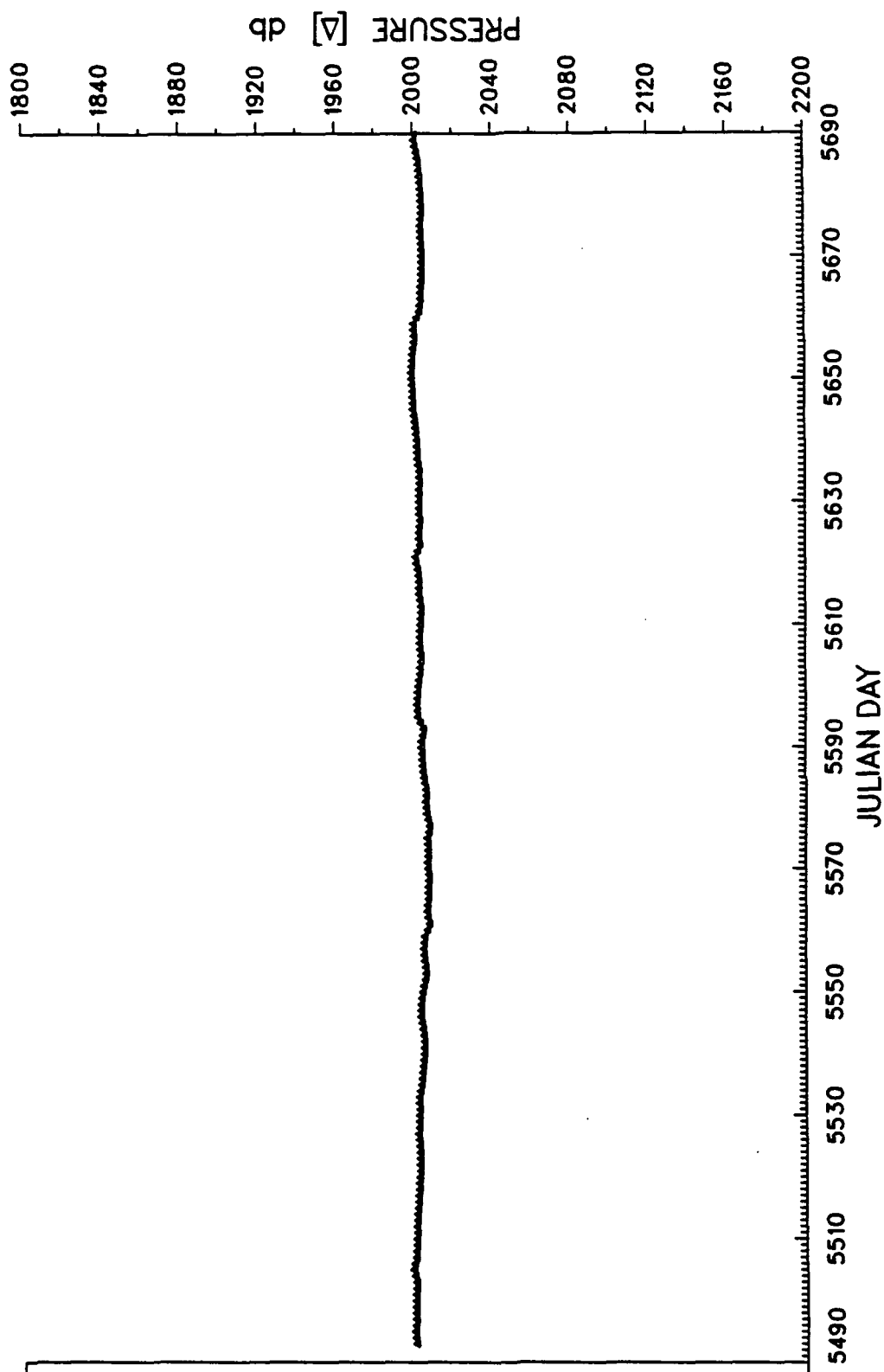
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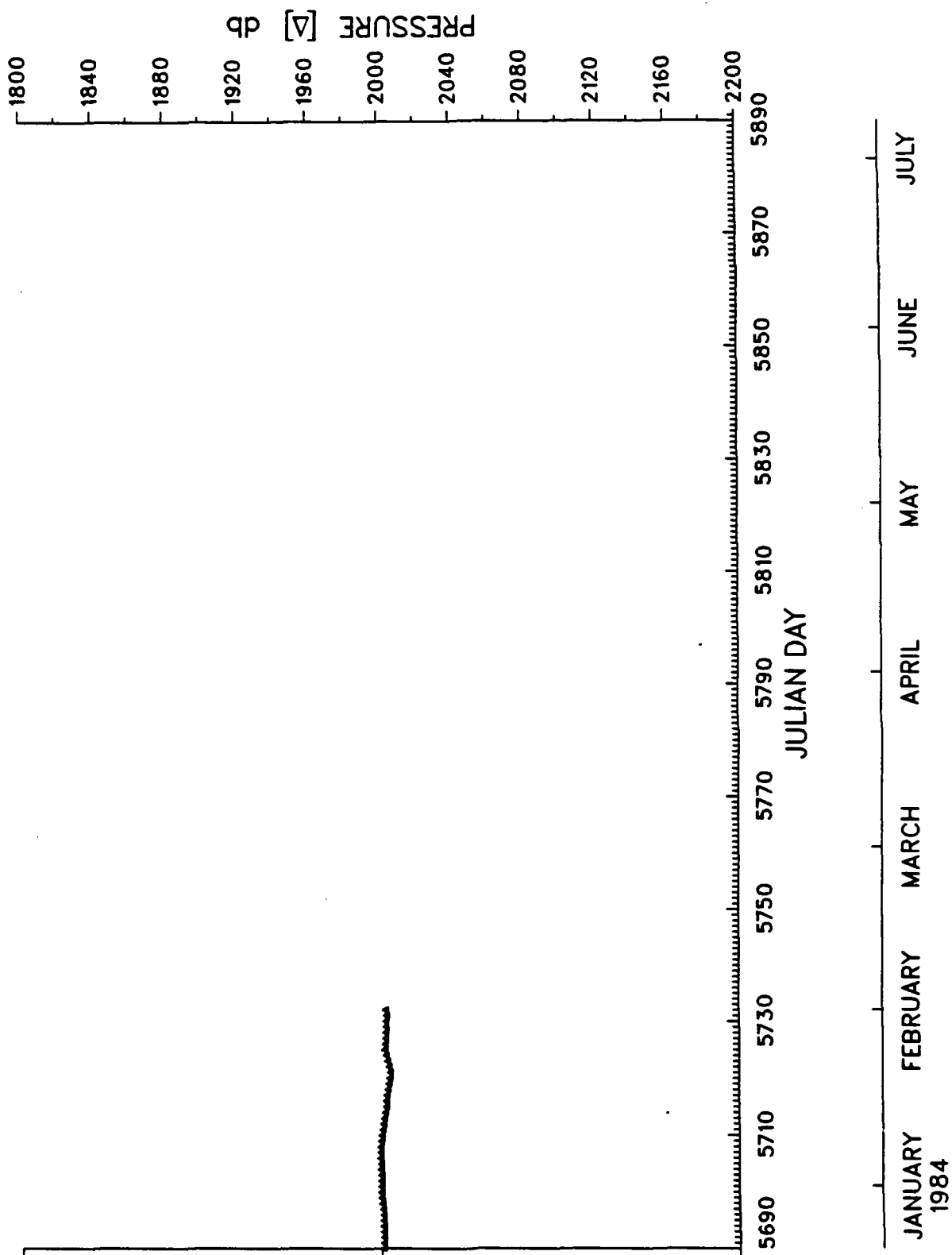


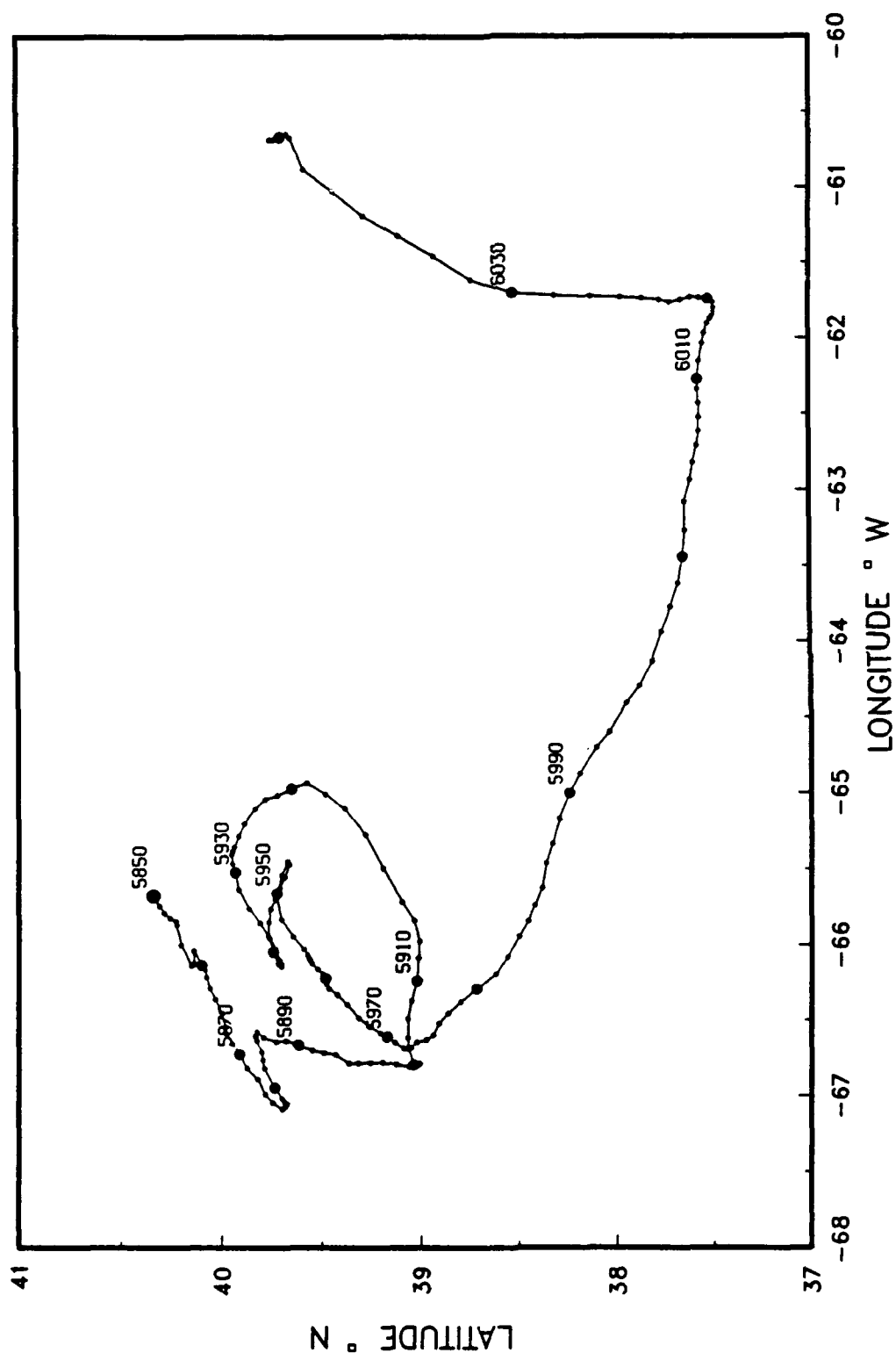
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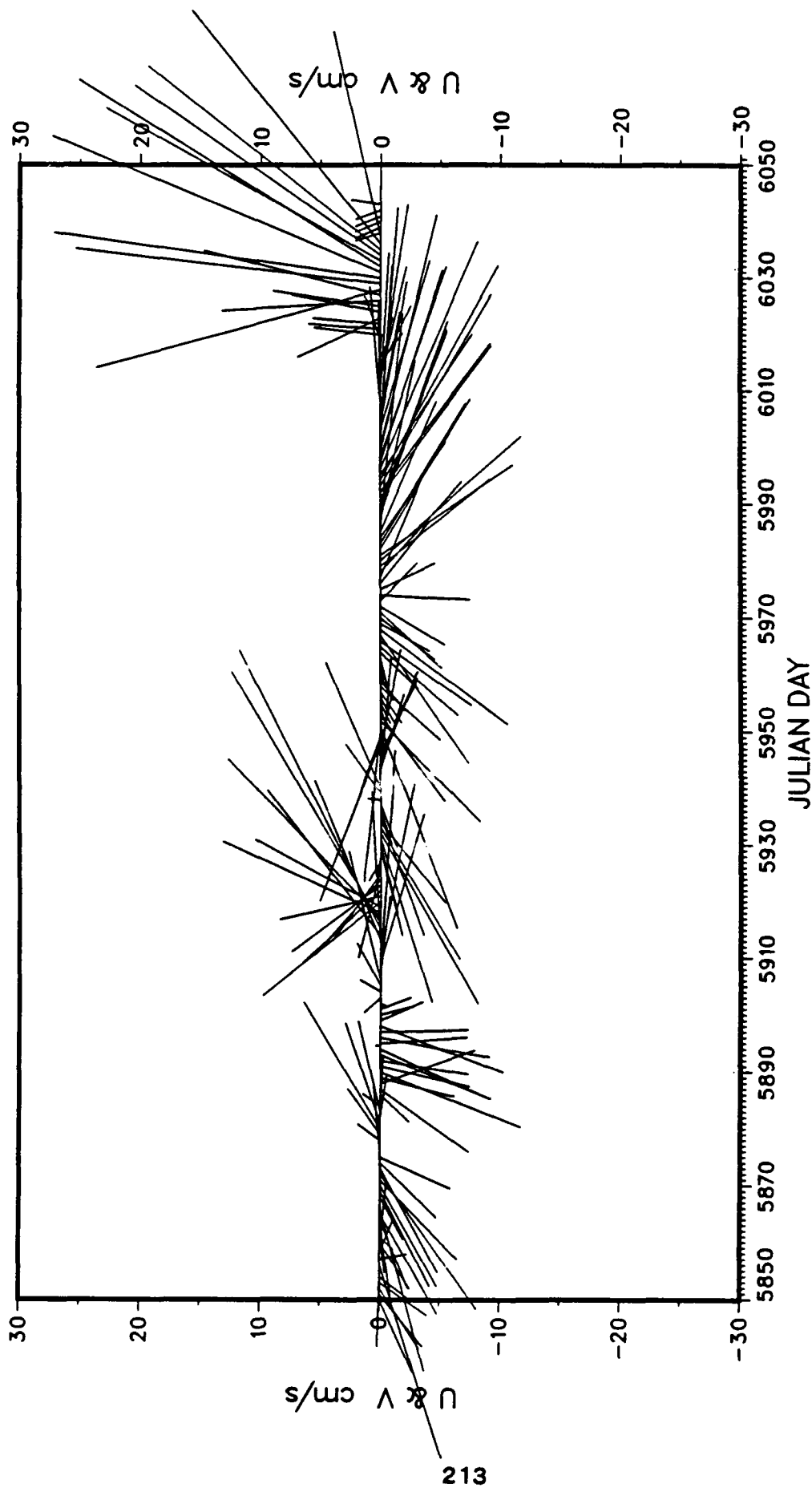
JULY 1983
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

GUSREX 167B



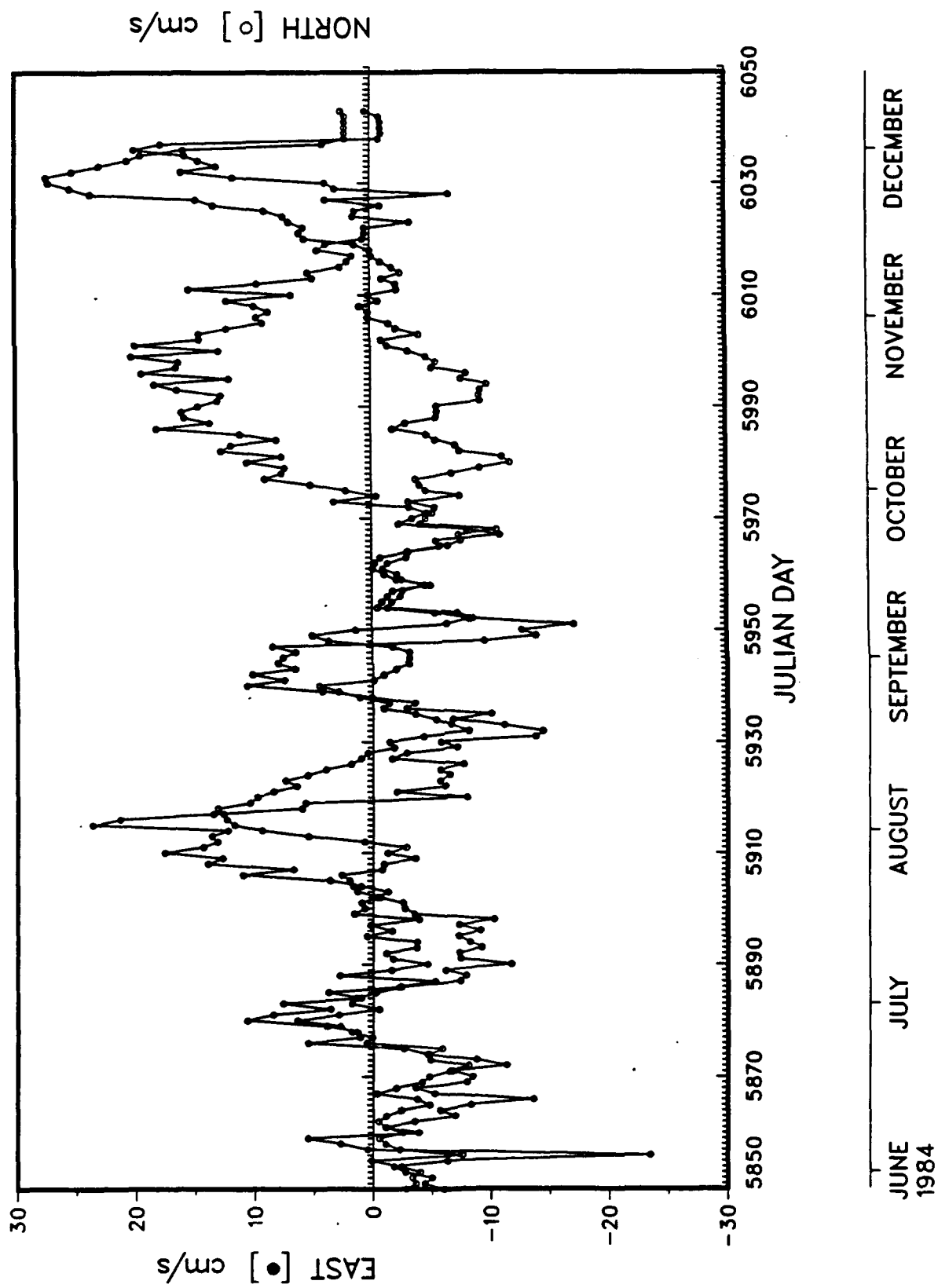


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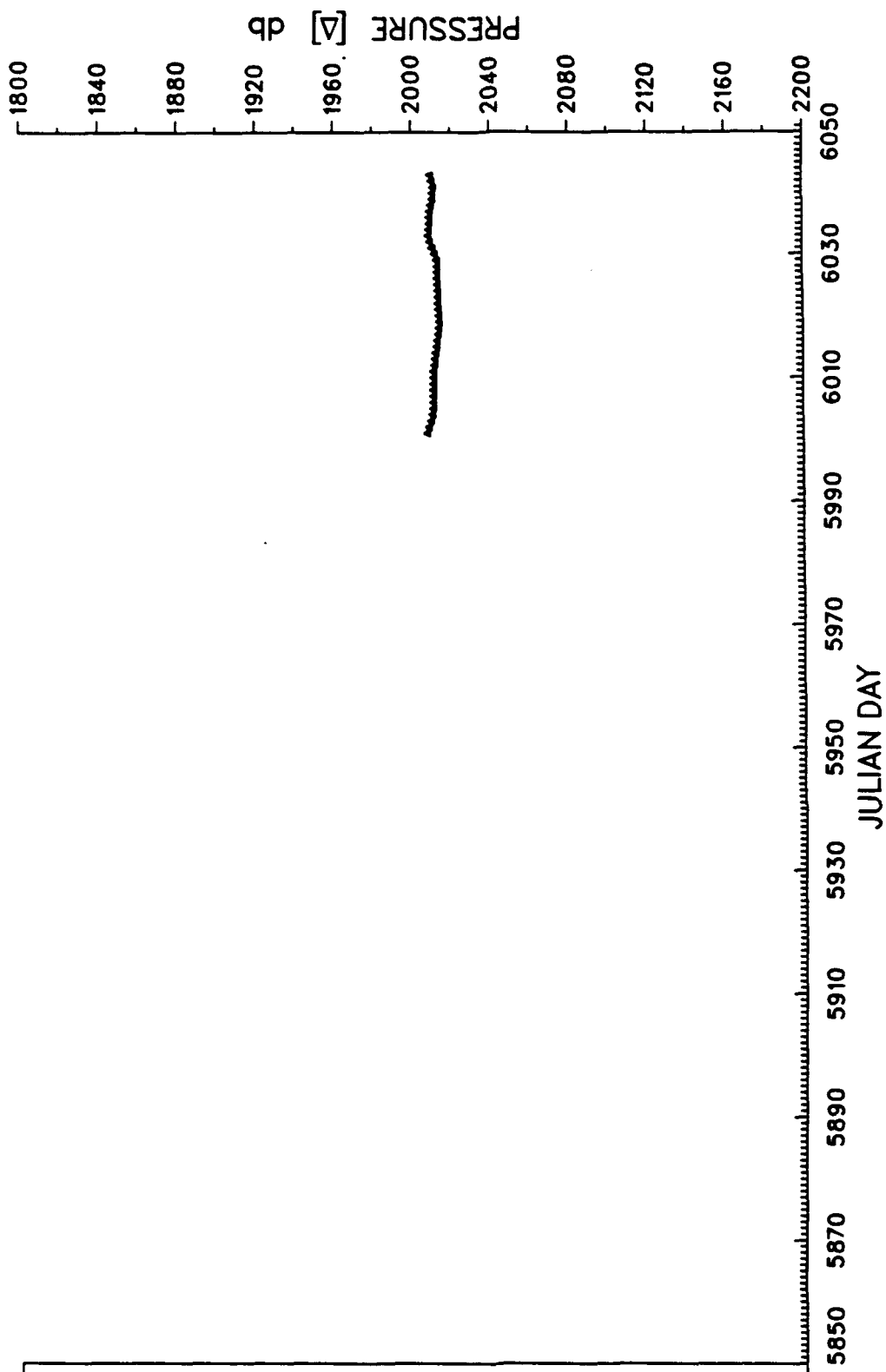


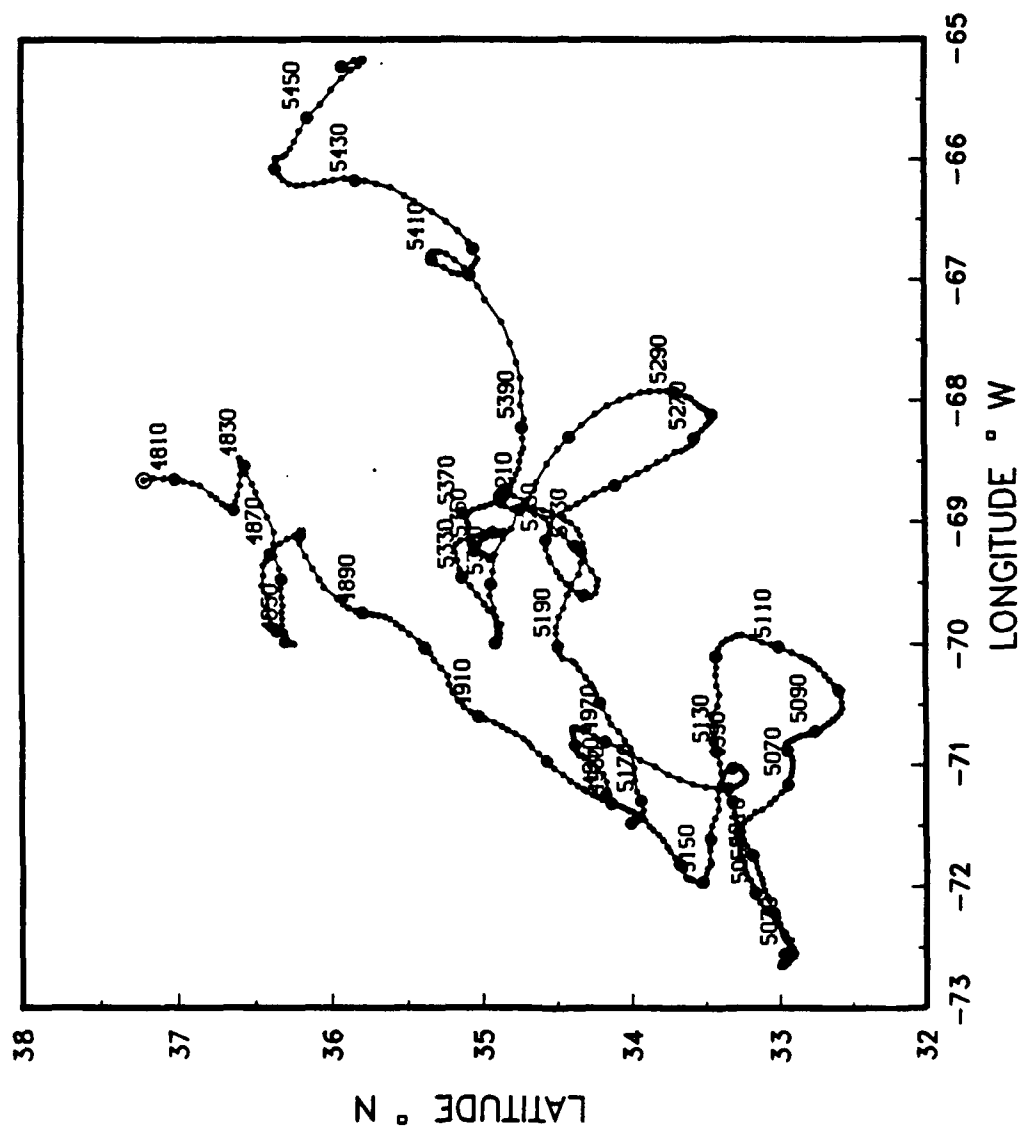
JUNE 1984 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

GUSREX 167C

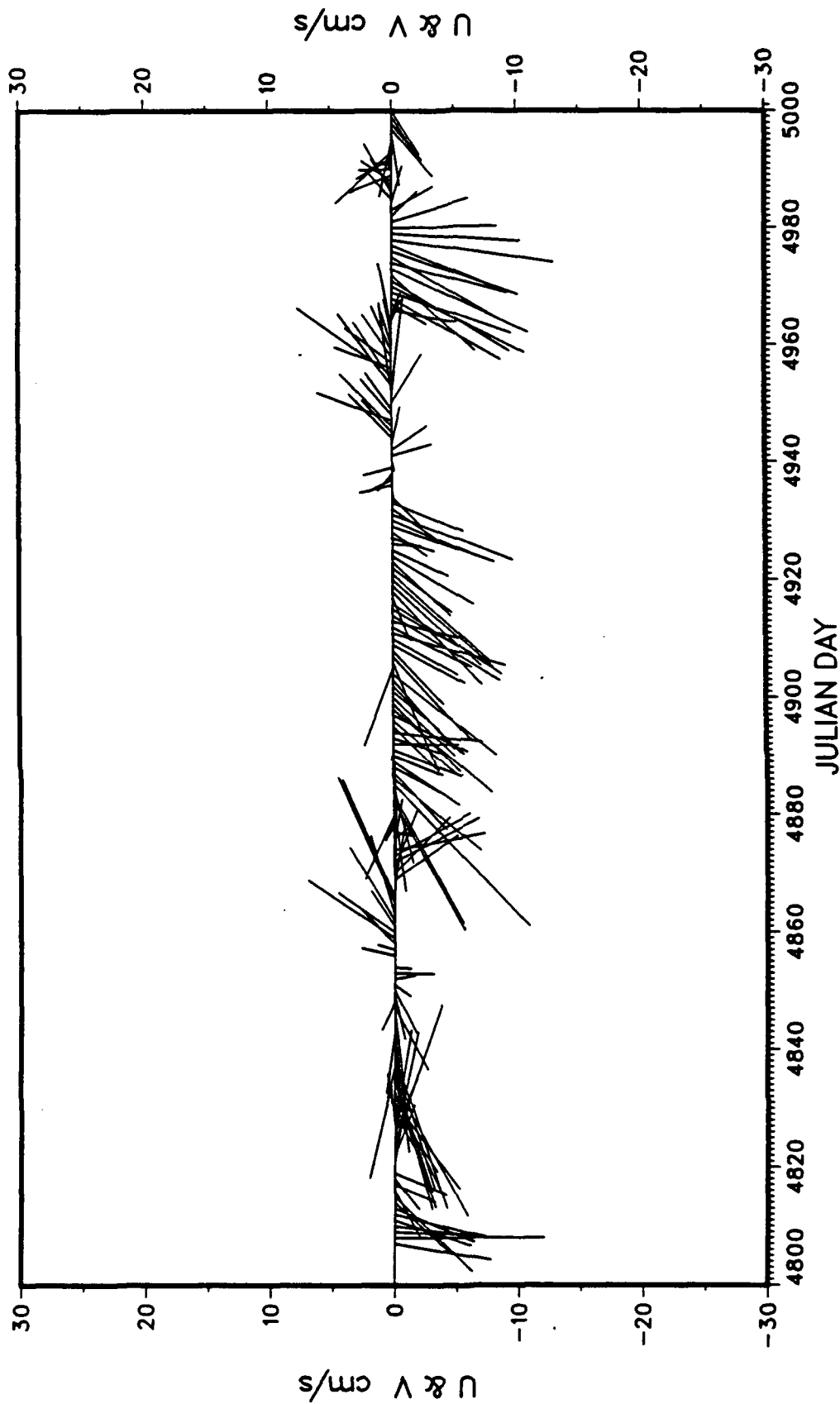


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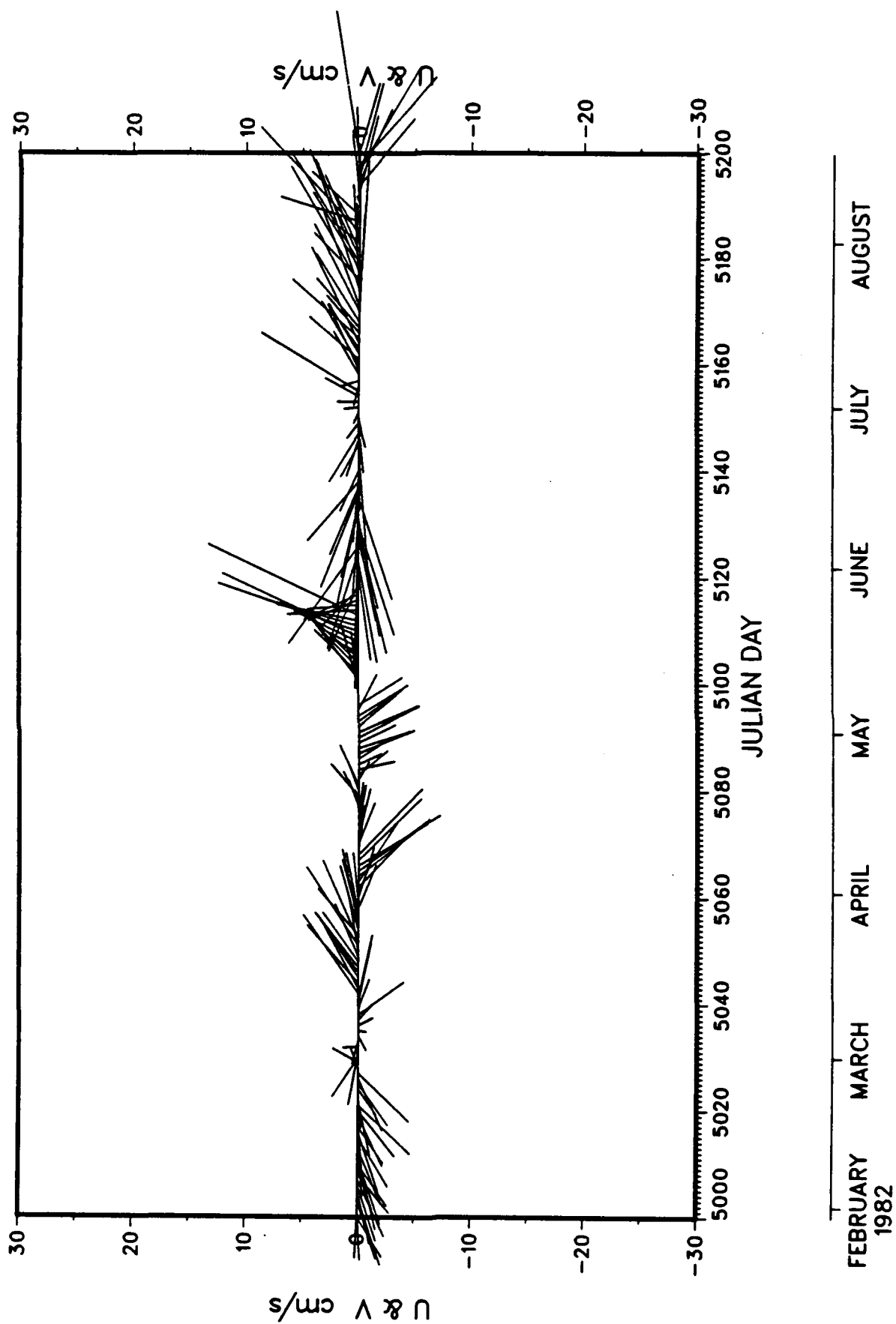


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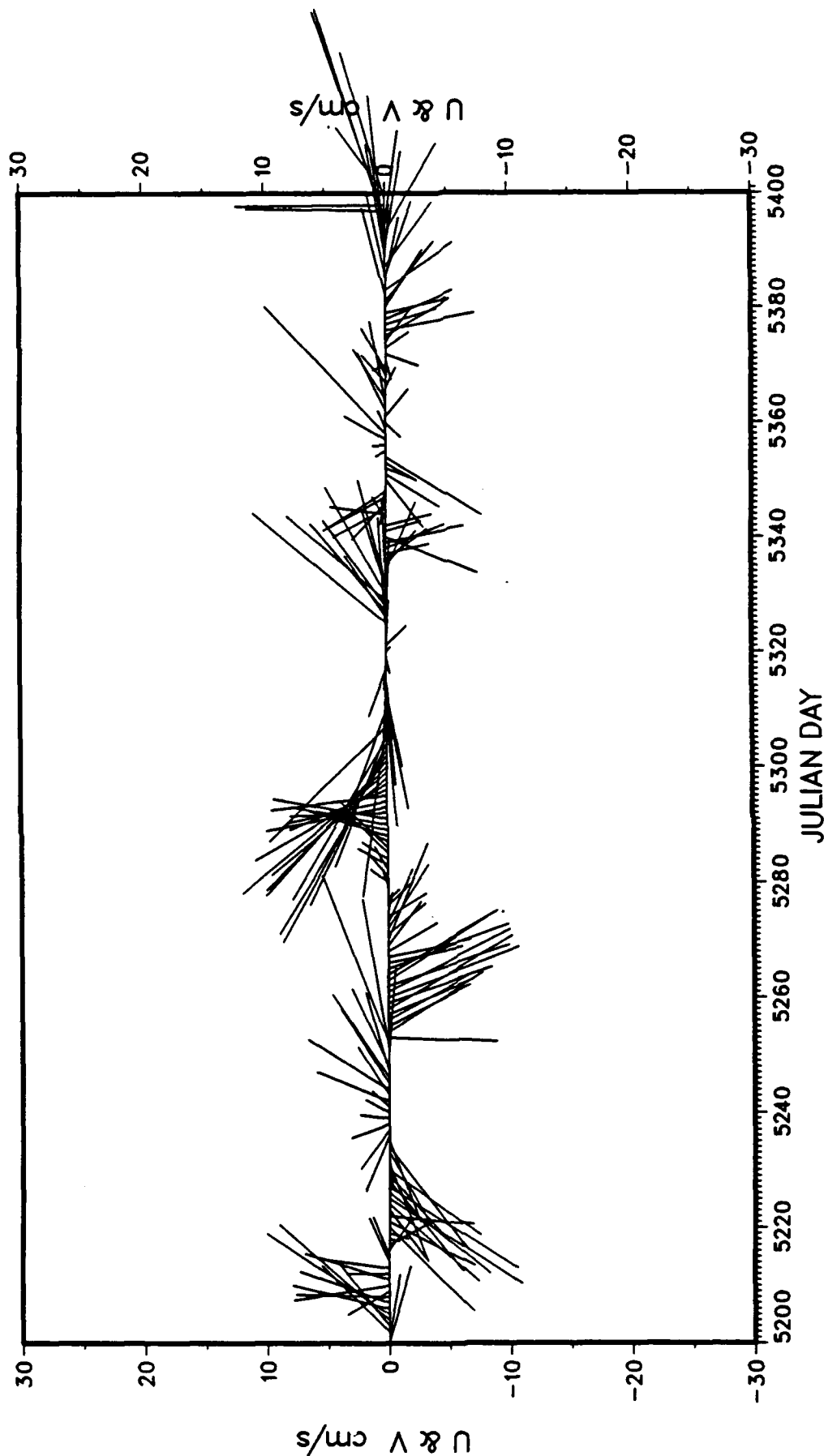


AUGUST 1981 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1982

GUSREX 169A

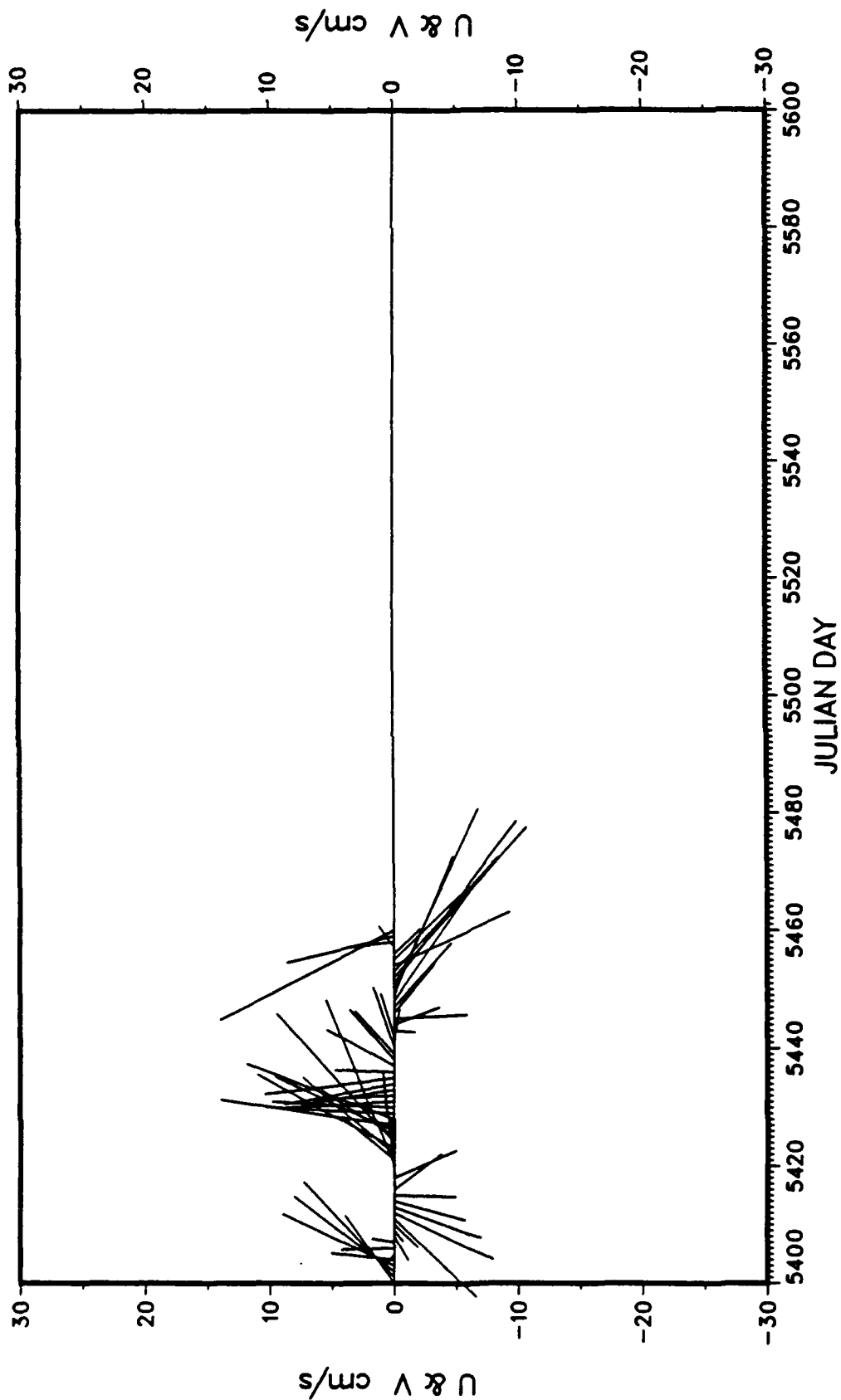


GUSREX 169A



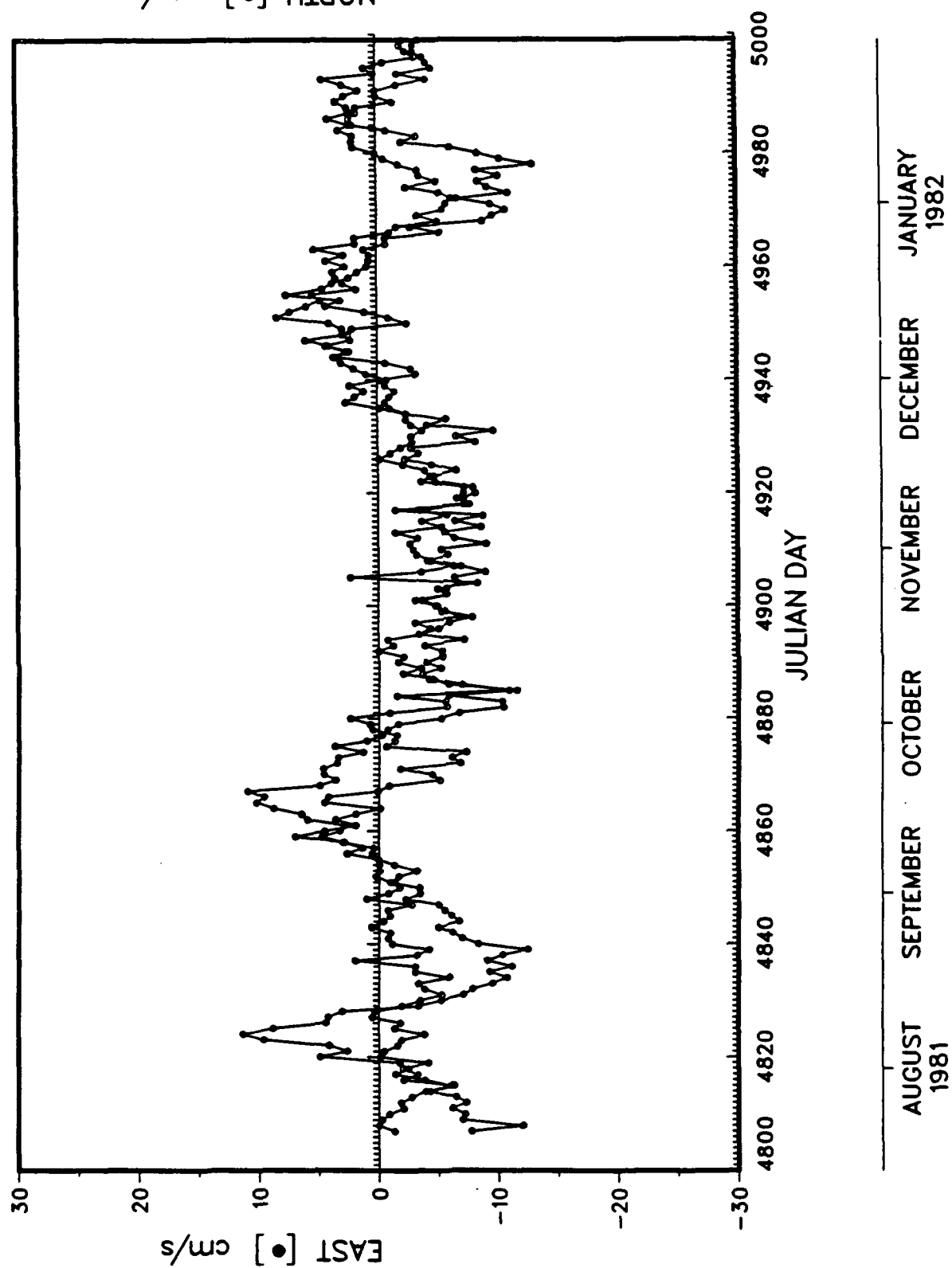
SEPTEMBER 1982 OCTOBER NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH

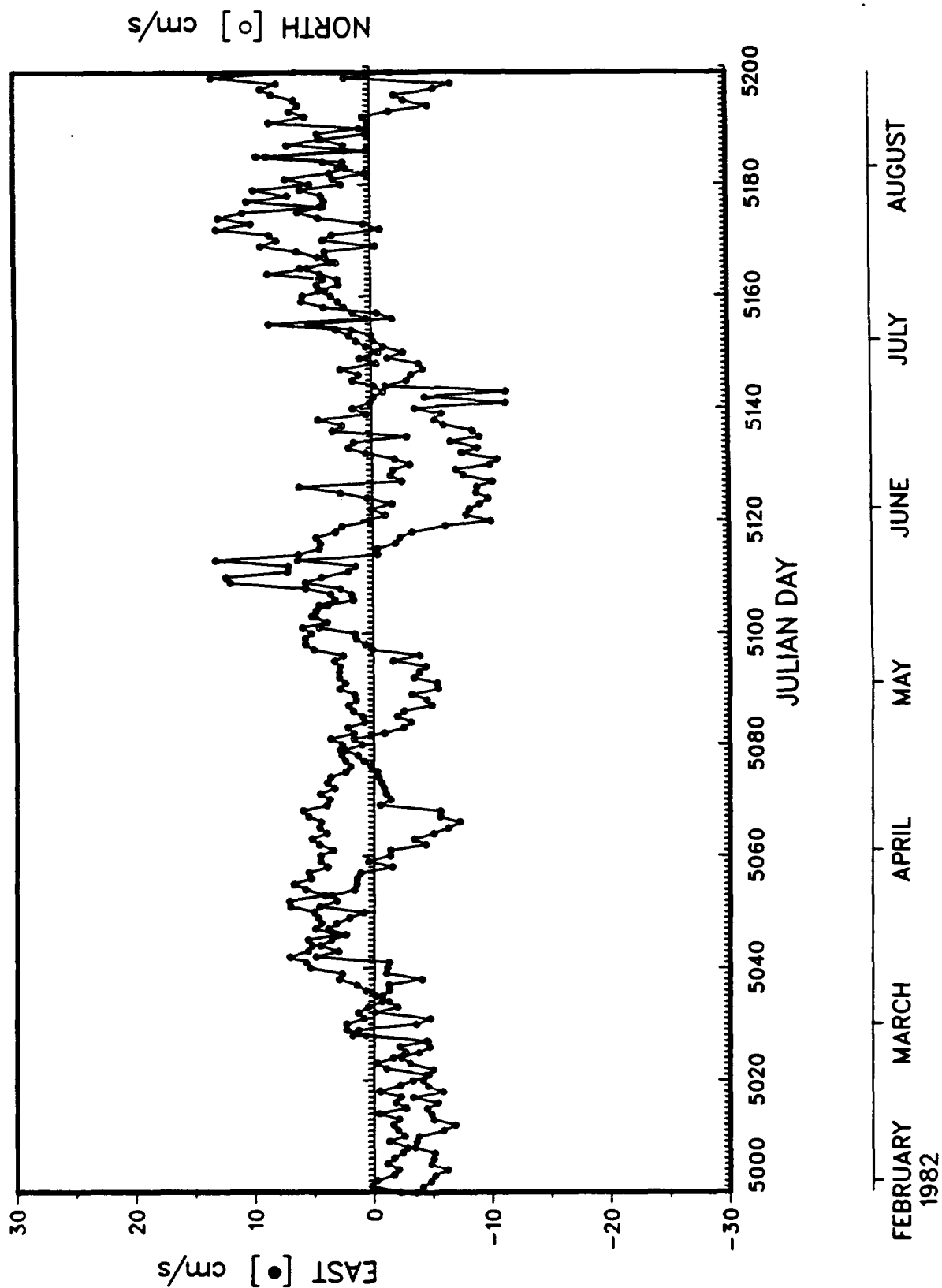
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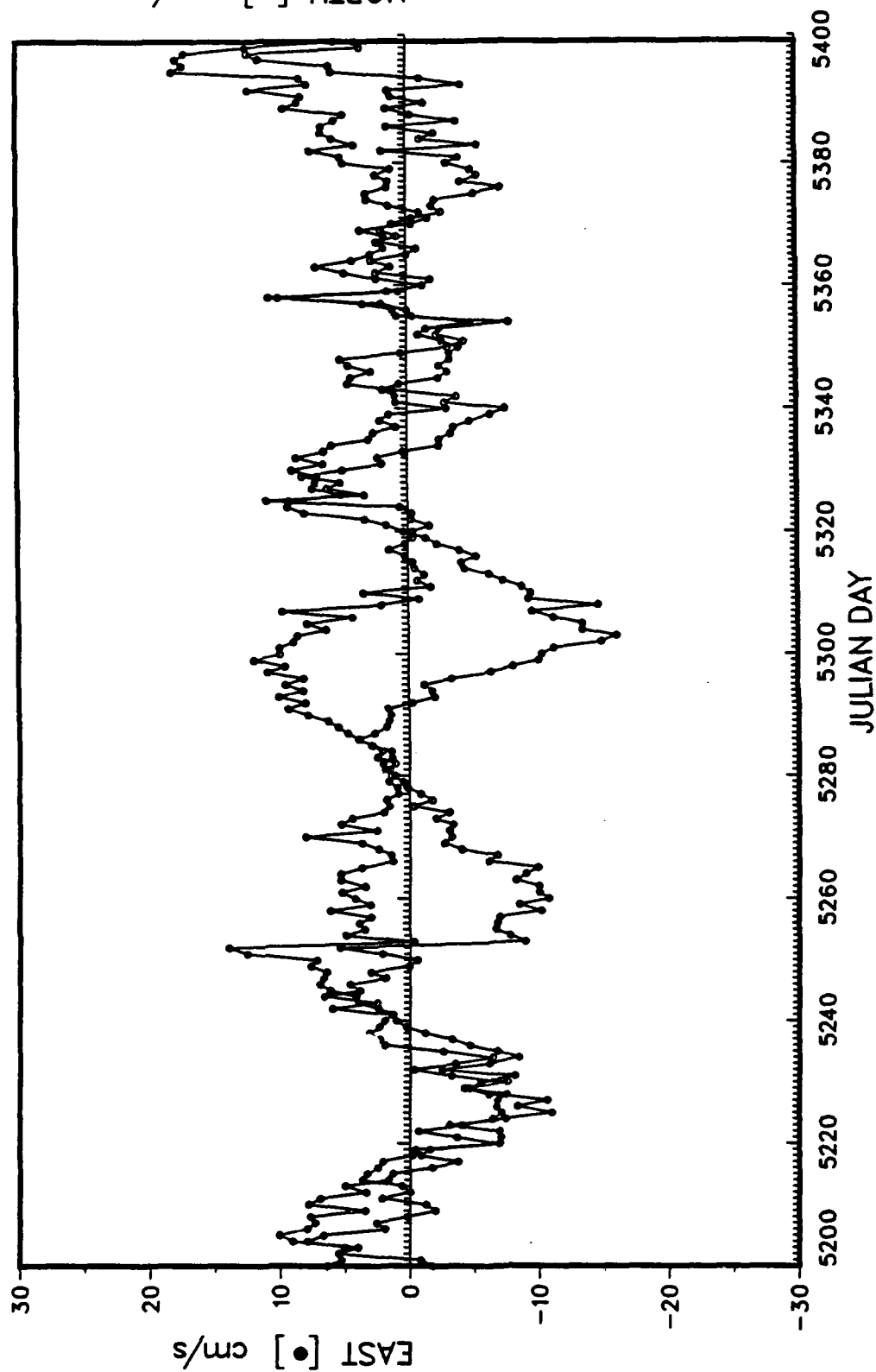
APRIL 1983 MAY JUNE JULY AUGUST SEPTEMBER

GUSREX 169A

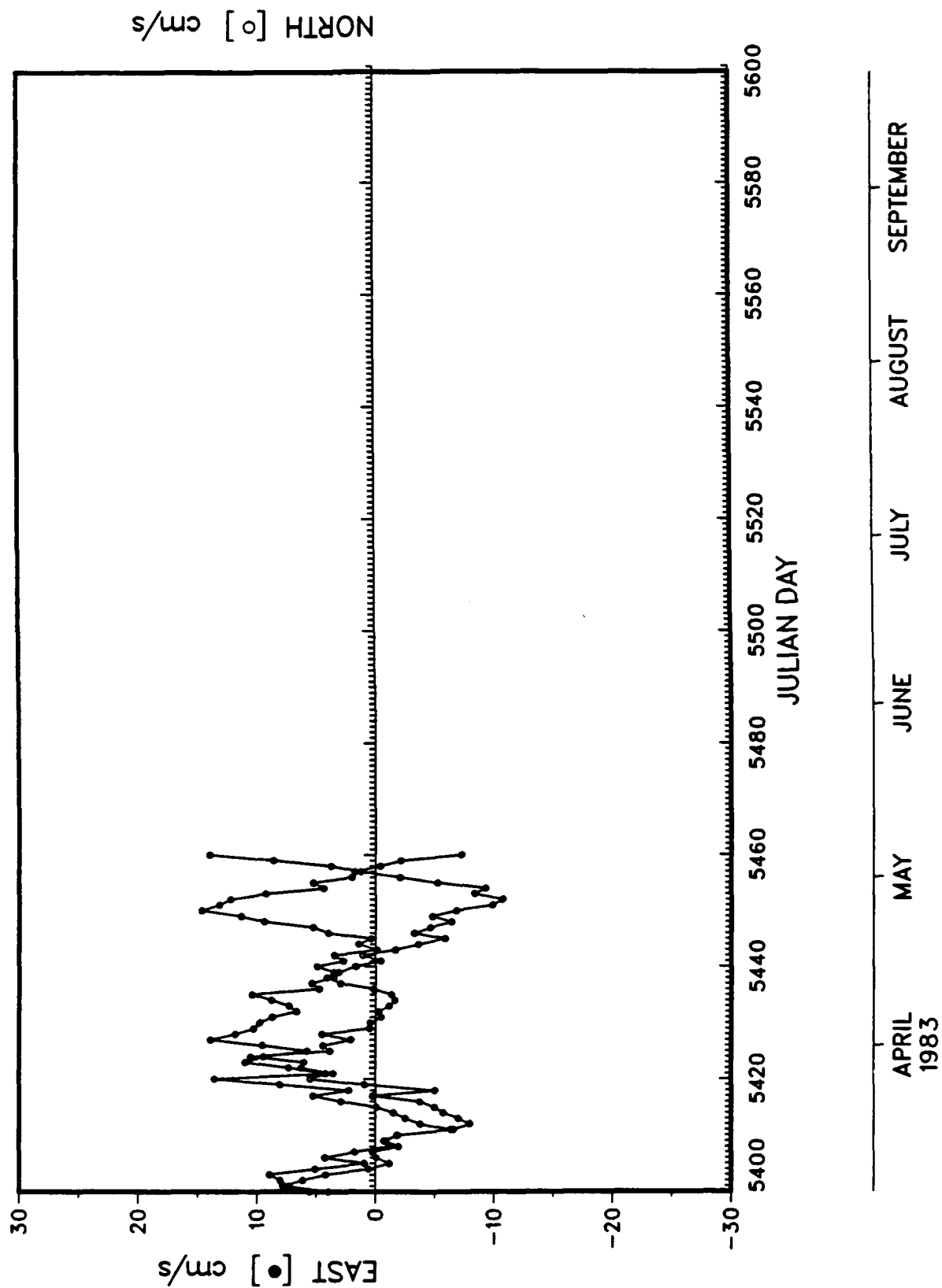




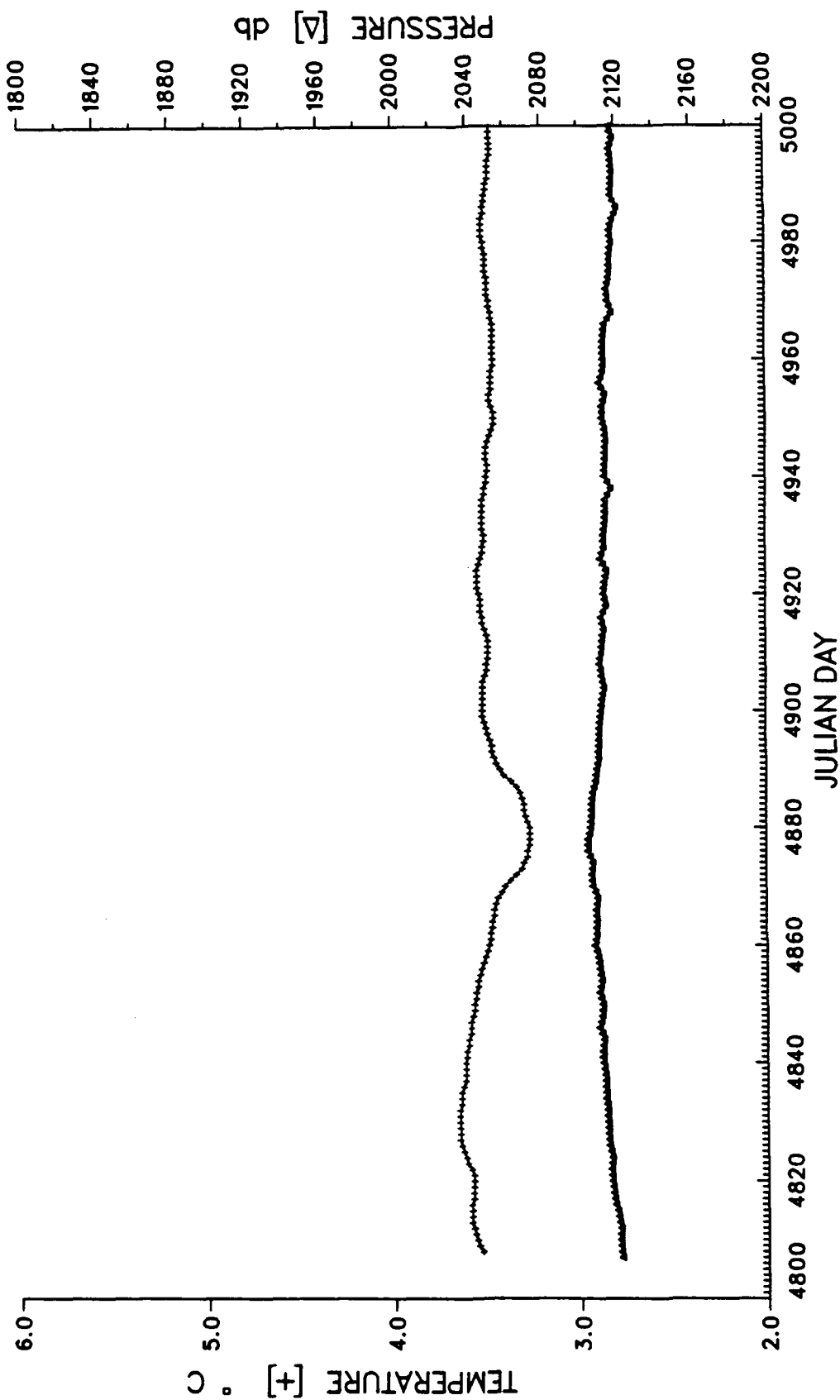
GUSREX 169A



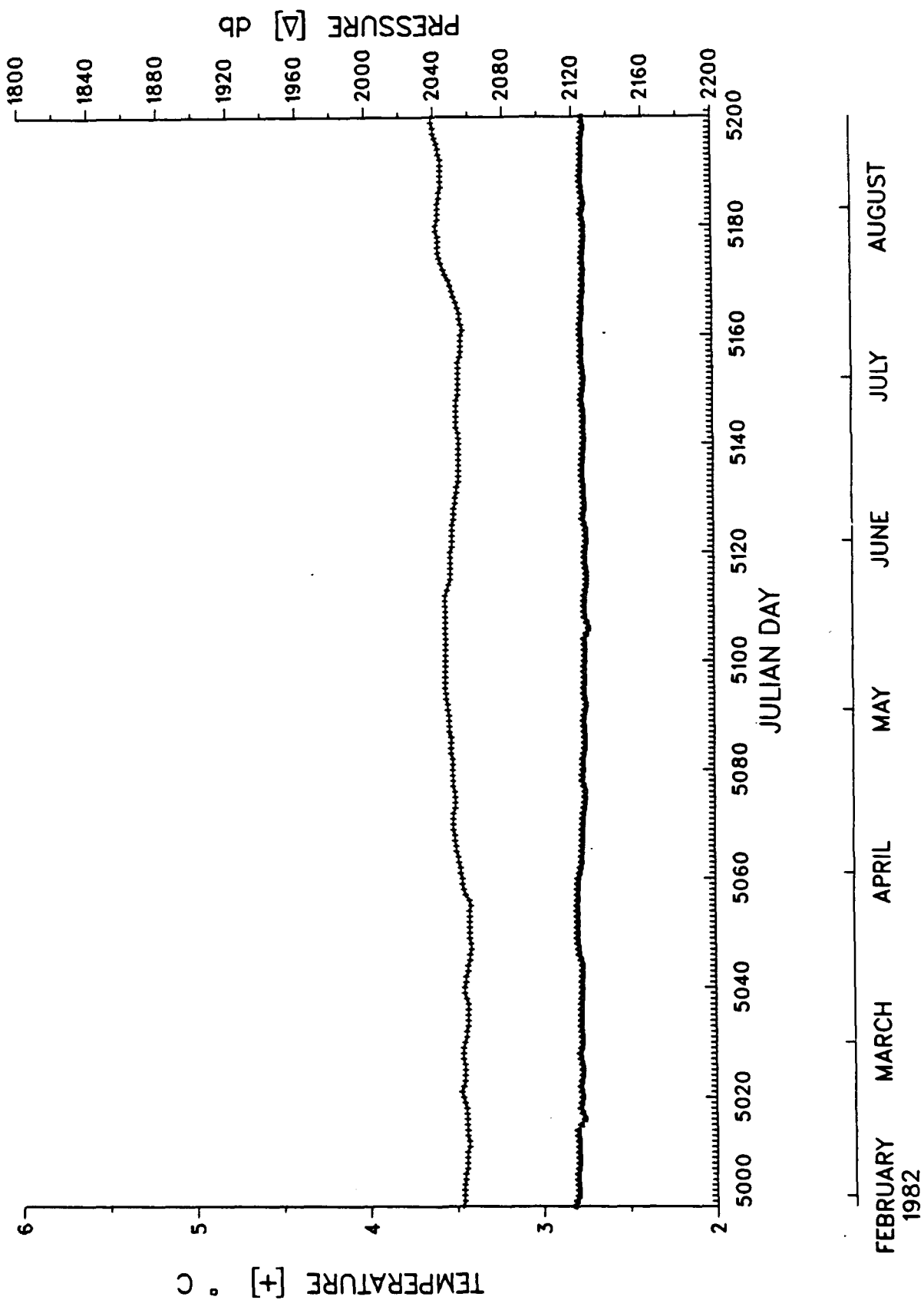
SEPTEMBER 1982 OCTOBER NOVEMBER DECEMBER JANUARY 1983 FEBRUARY MARCH



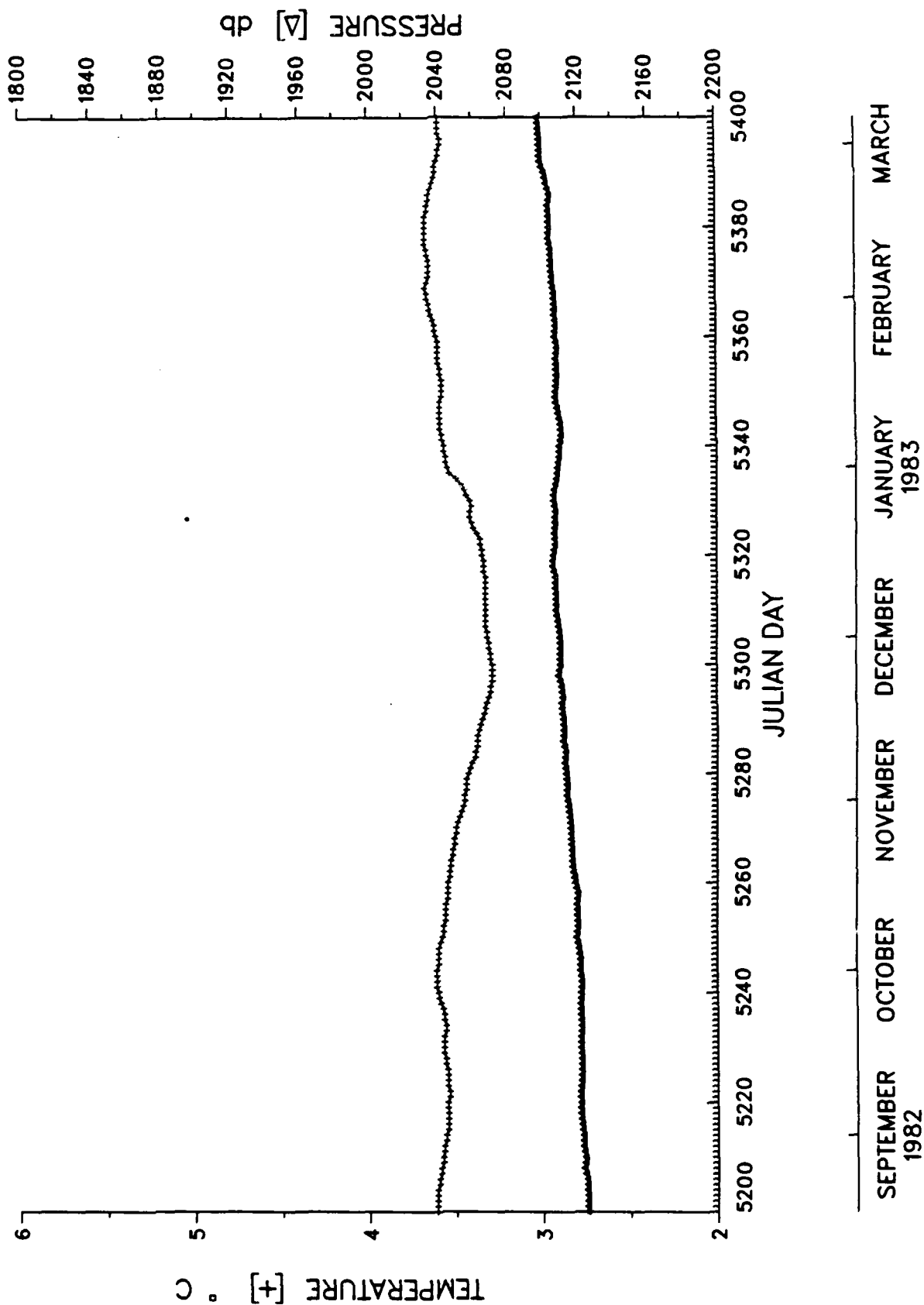
GUSREX 169A



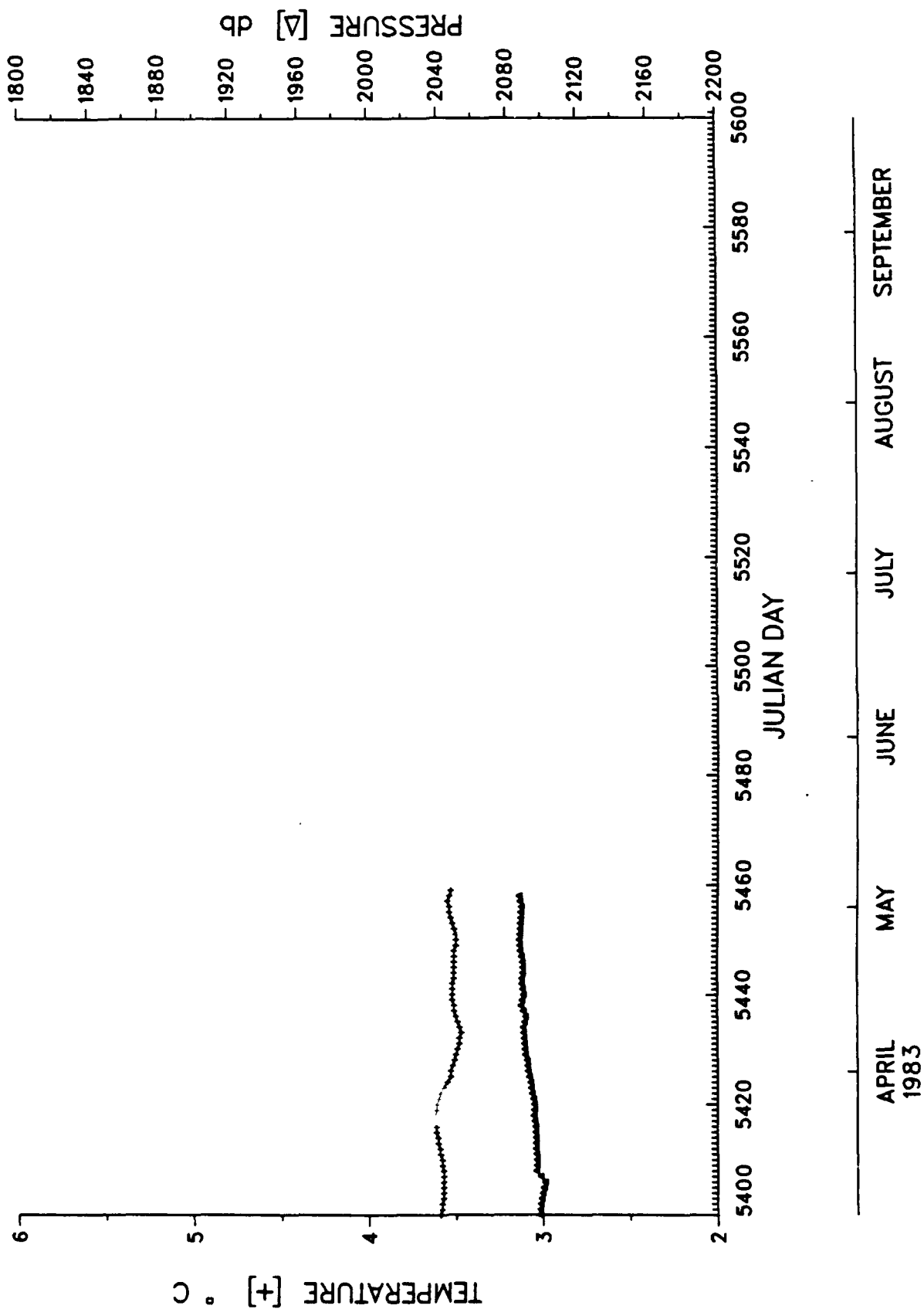
169A



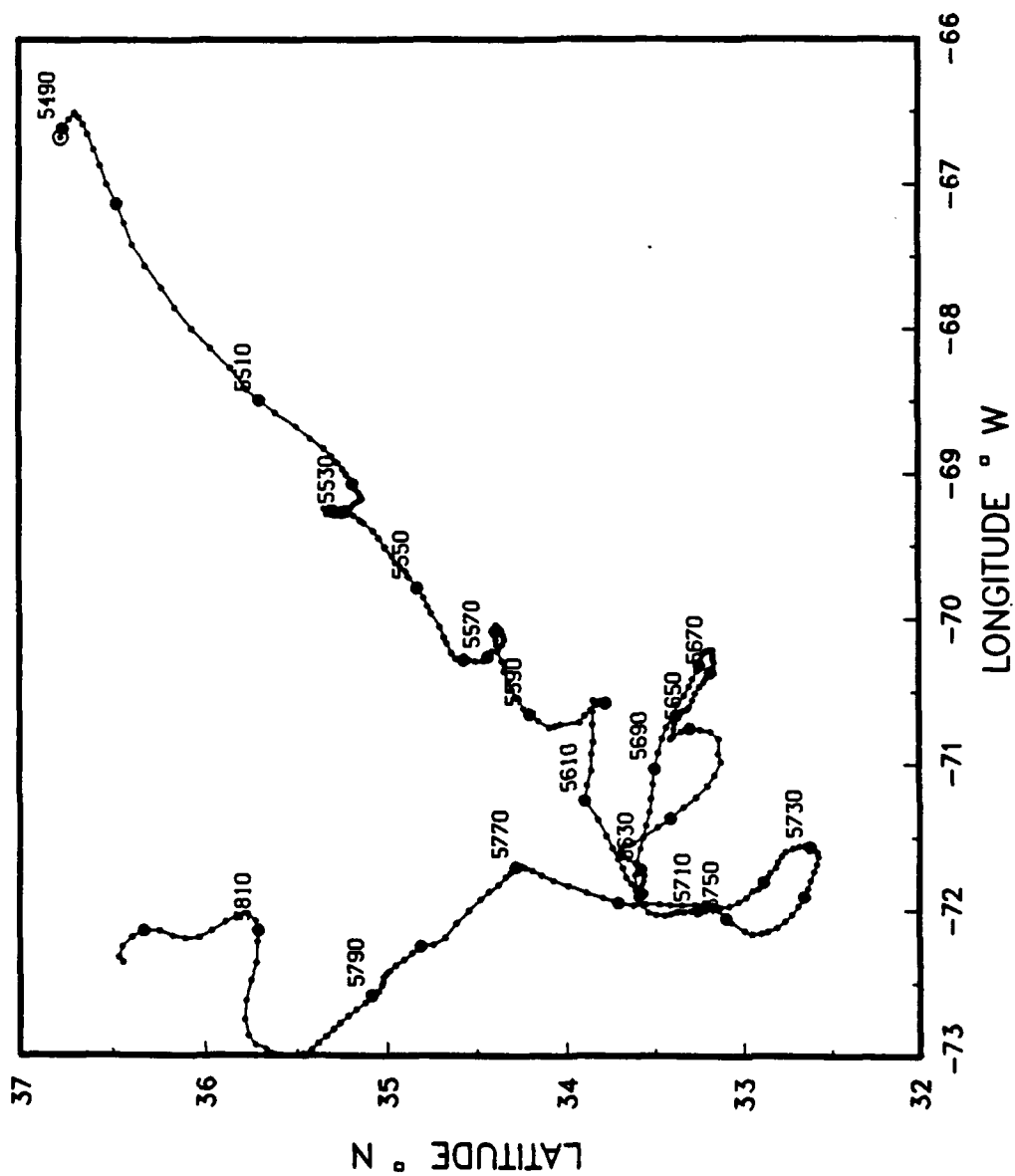
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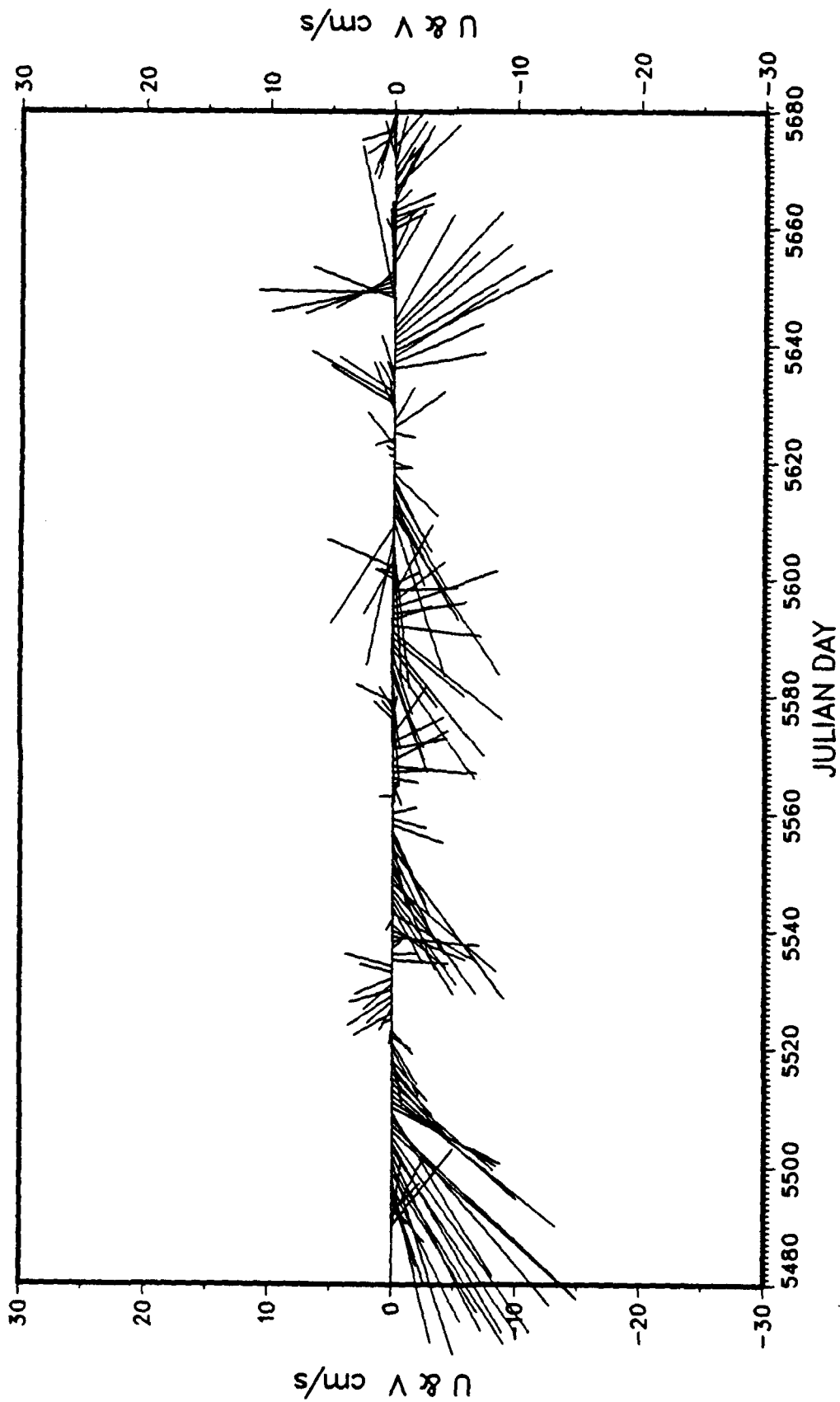
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GUSREX 169B

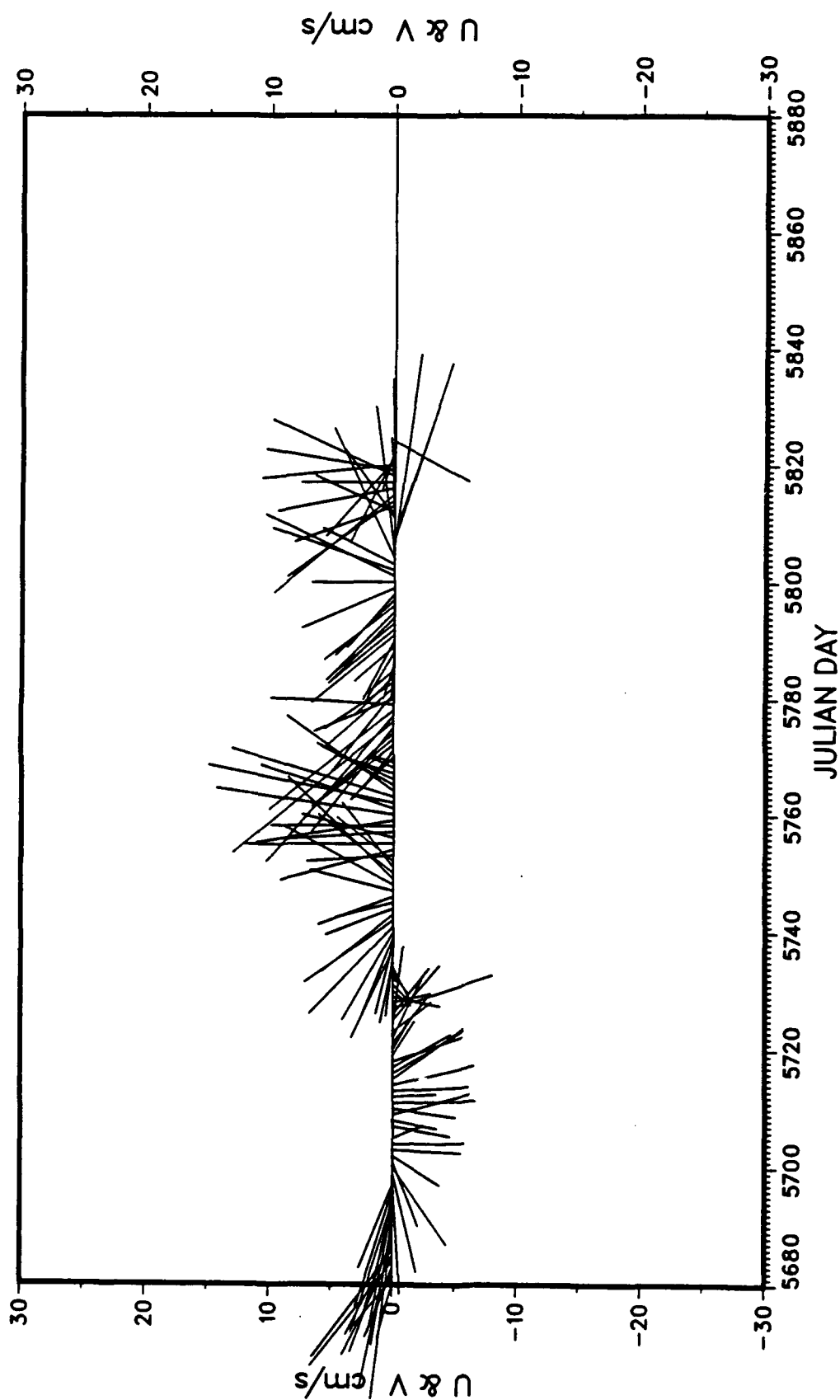


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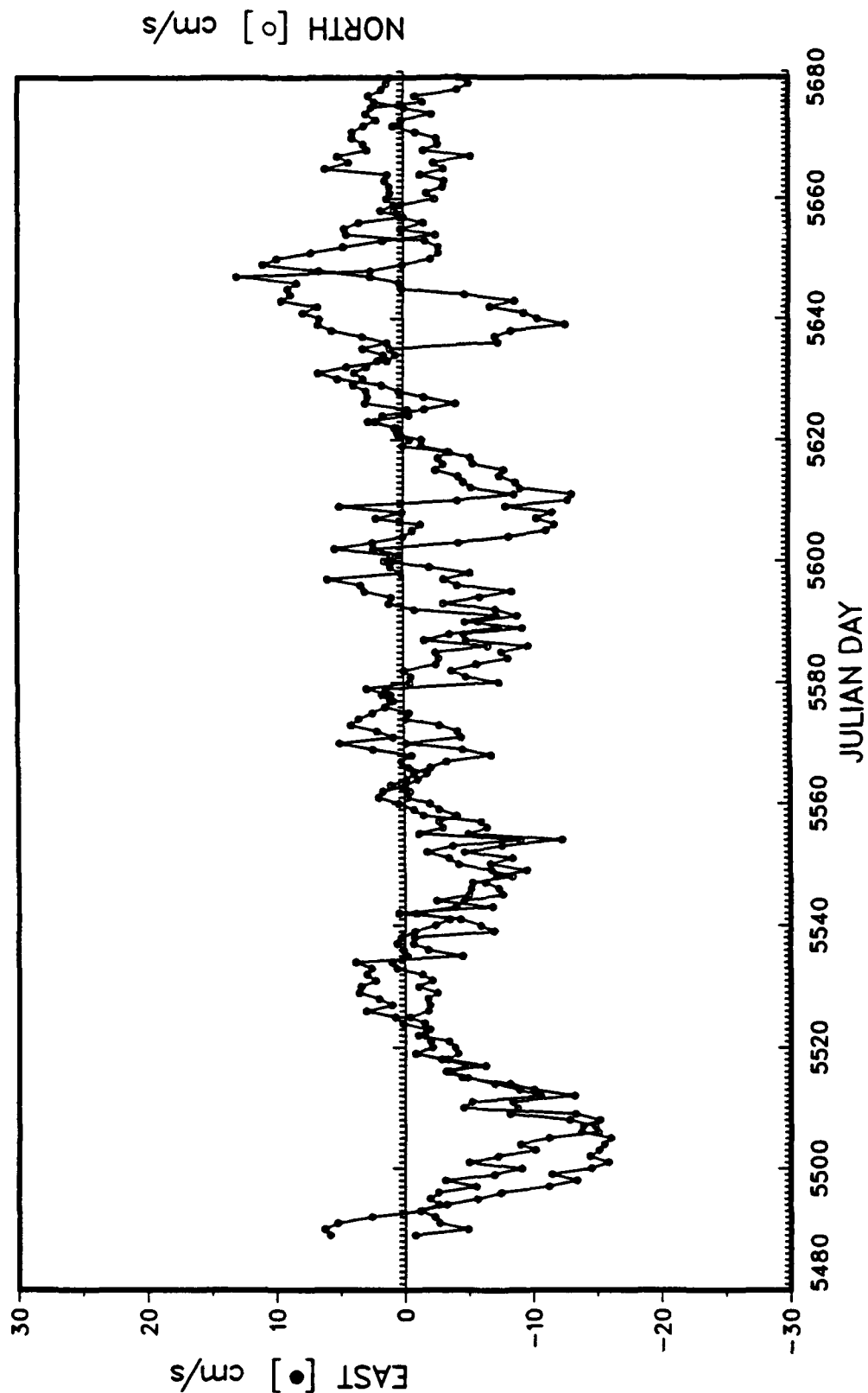
JUNE 1983 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

GUSREX 169B

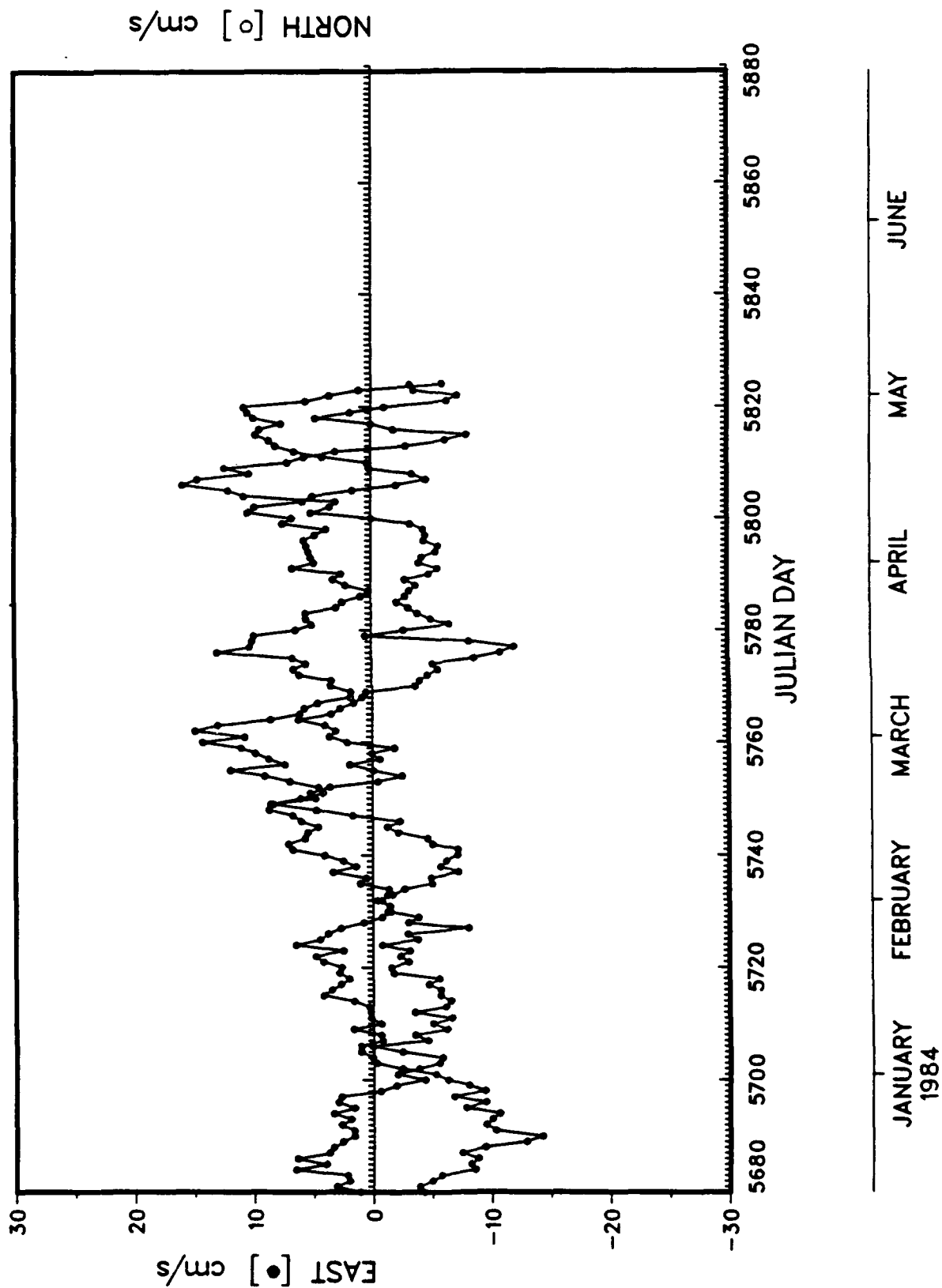


JANUARY 1984
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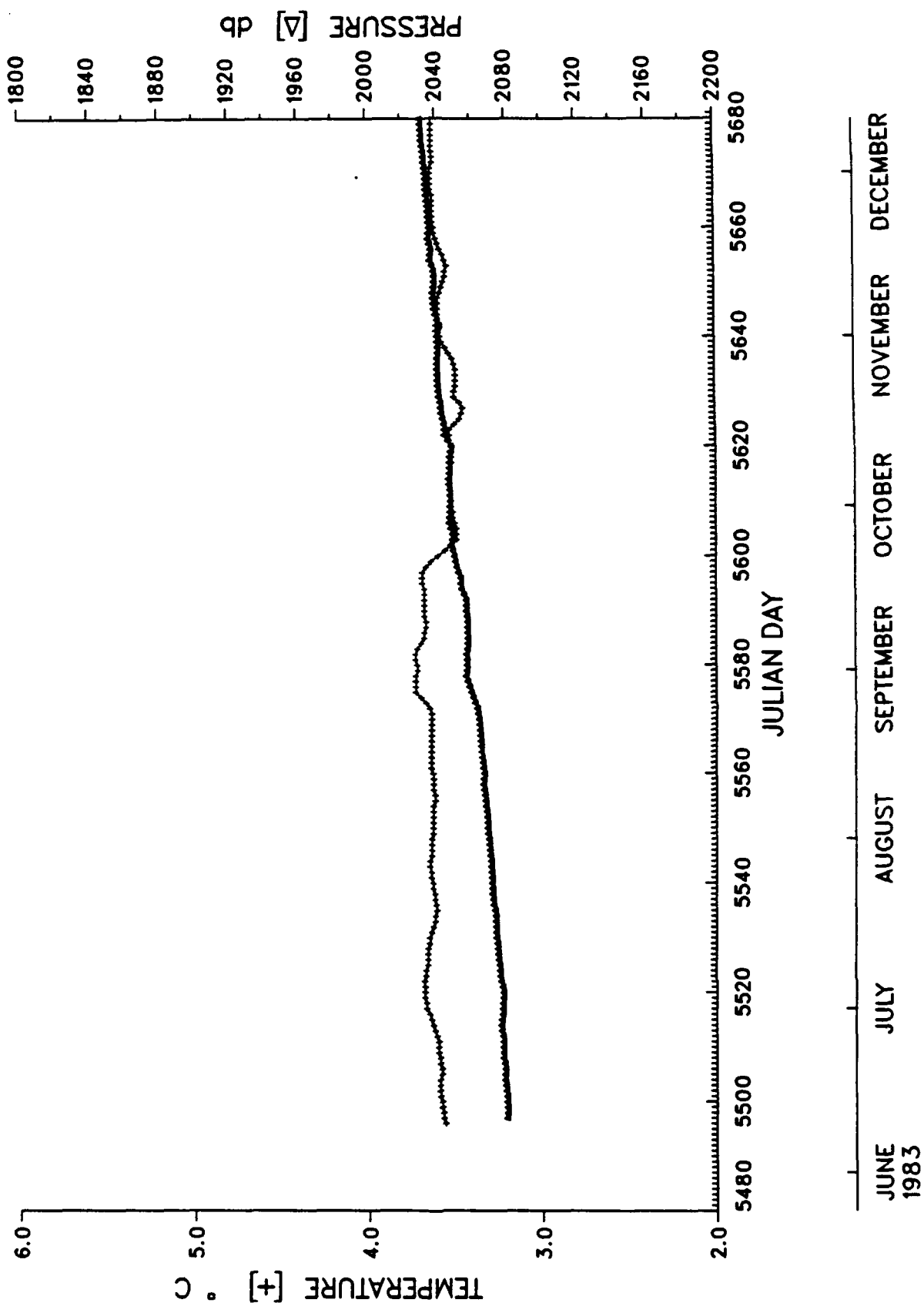
GUSREX 169B



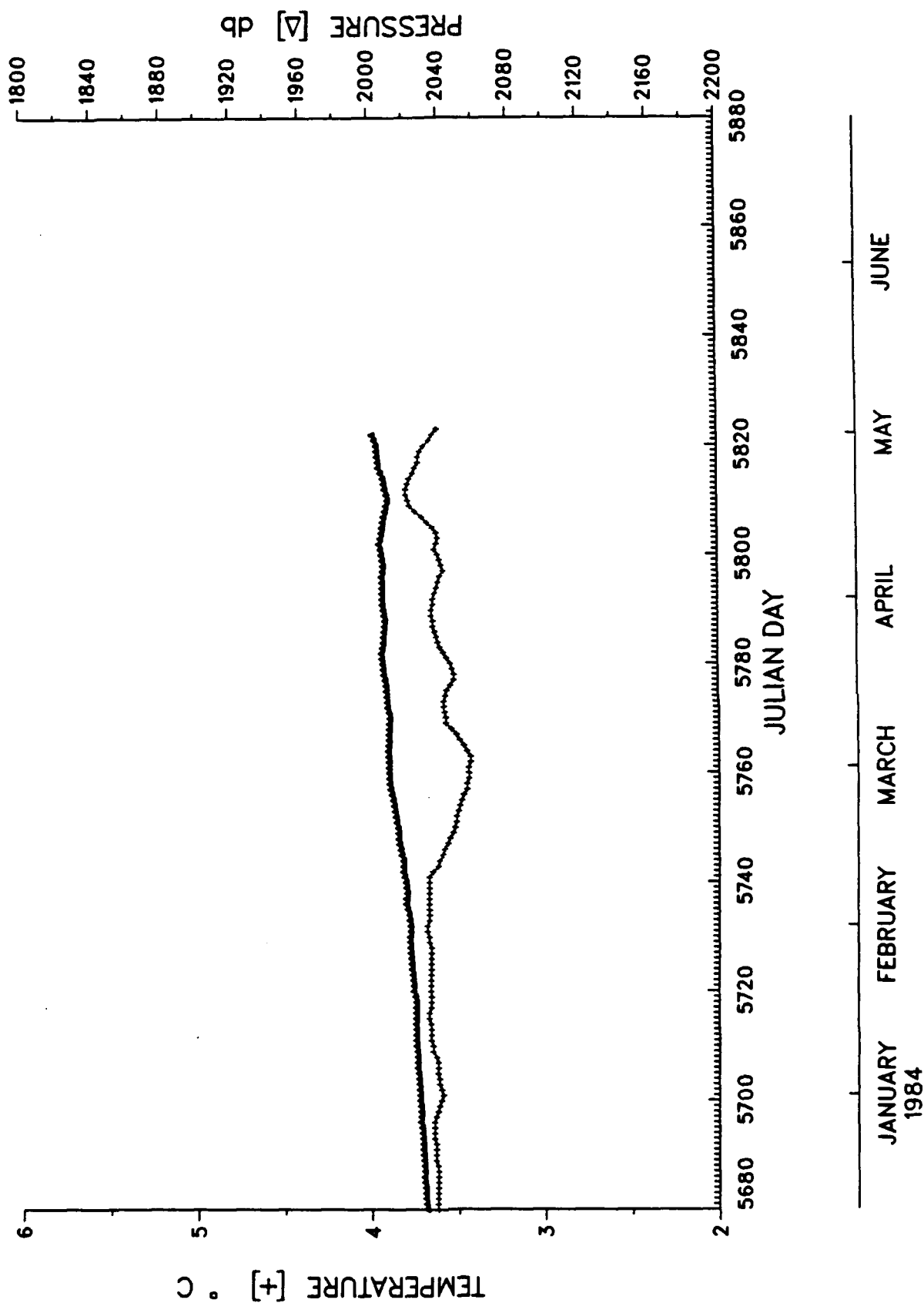
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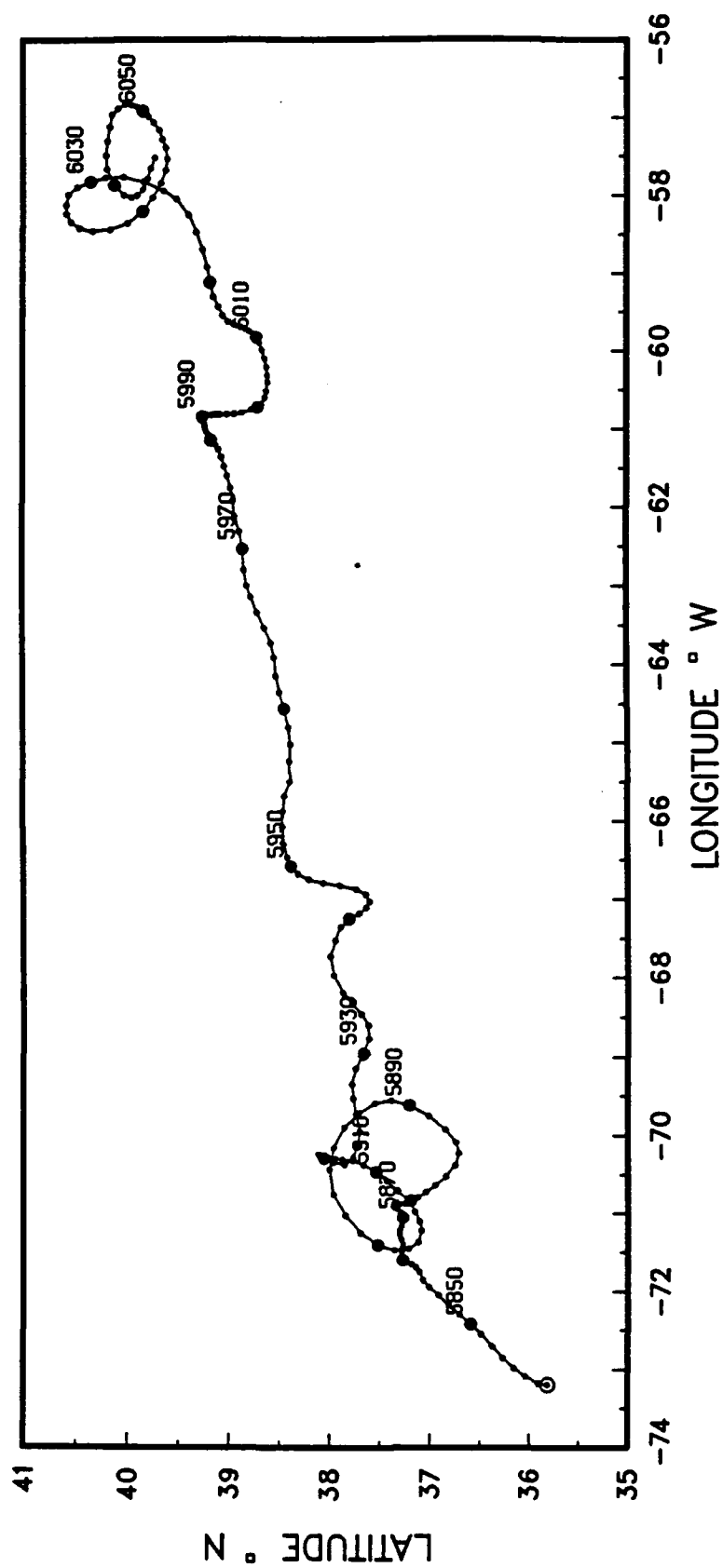
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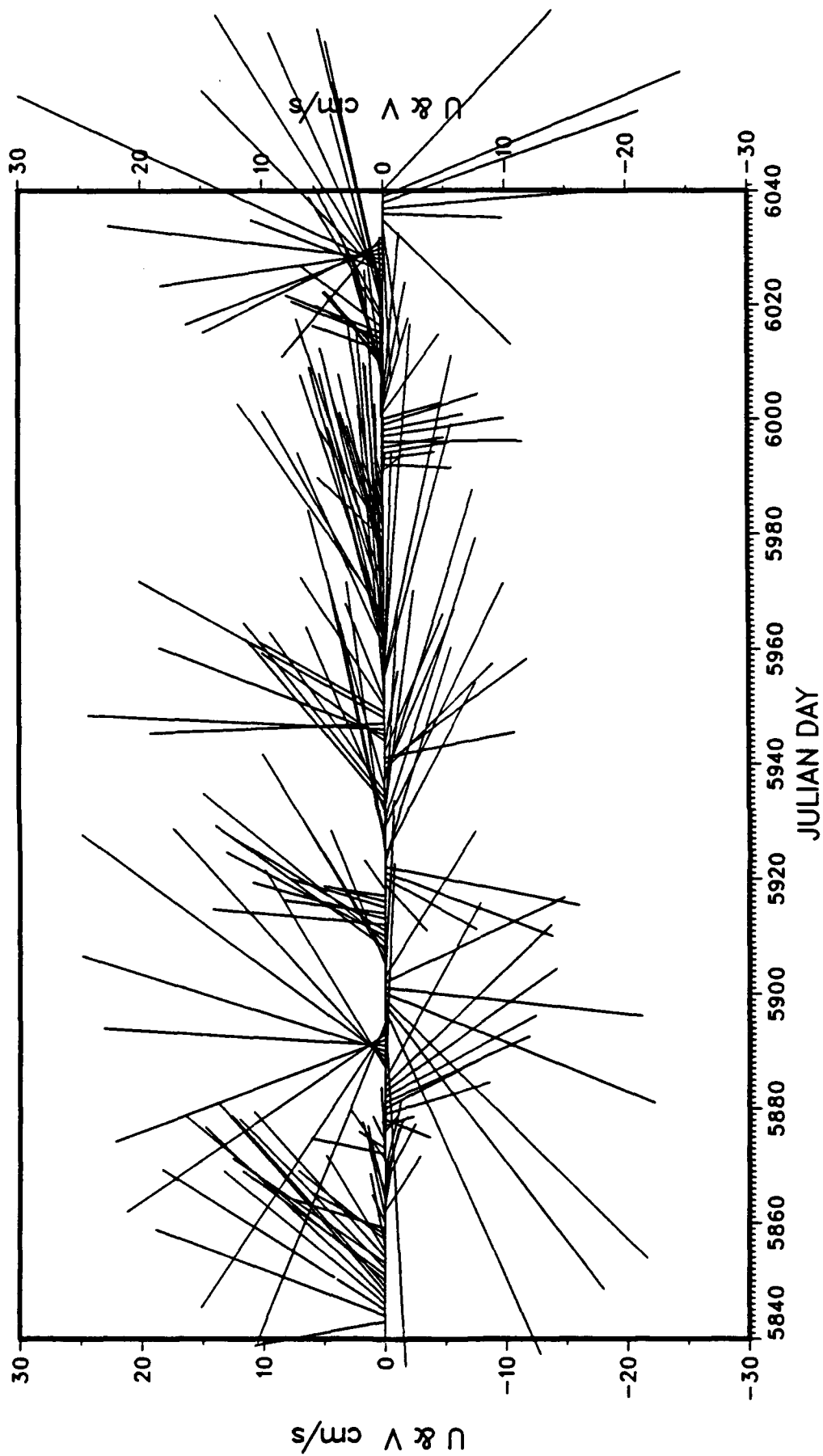
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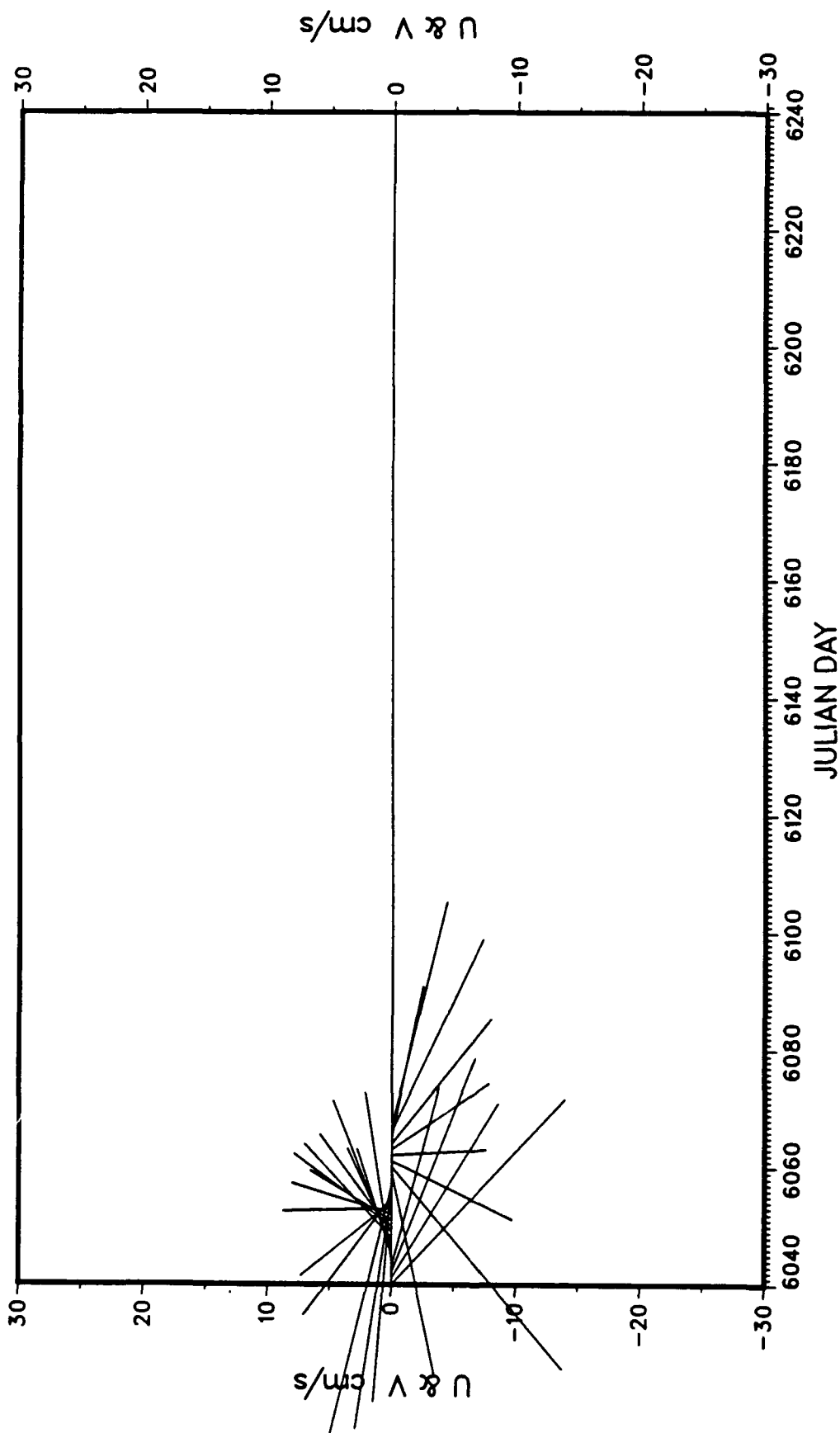
GUSREX 169C



GUSREX 169C

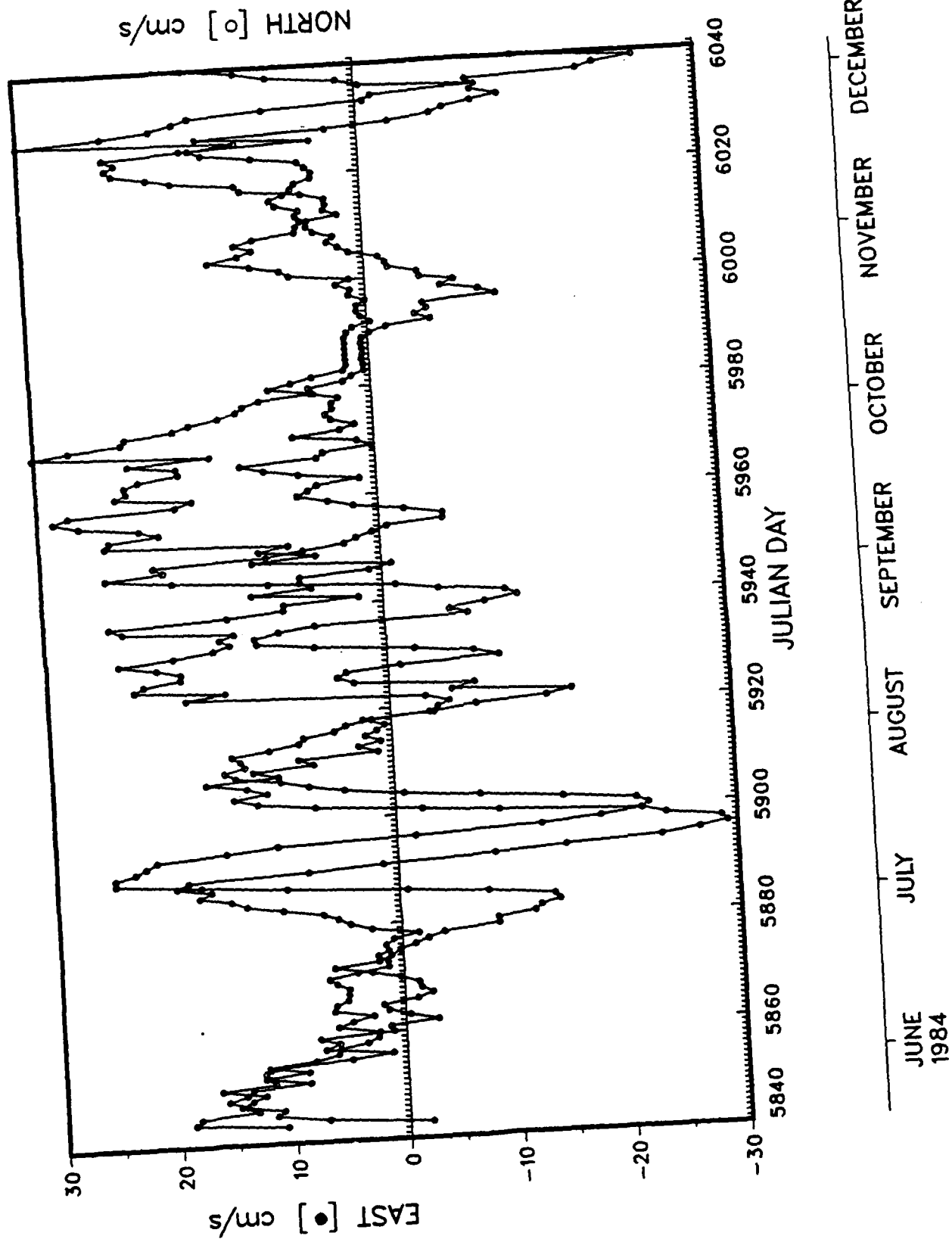


JUNE 1984 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

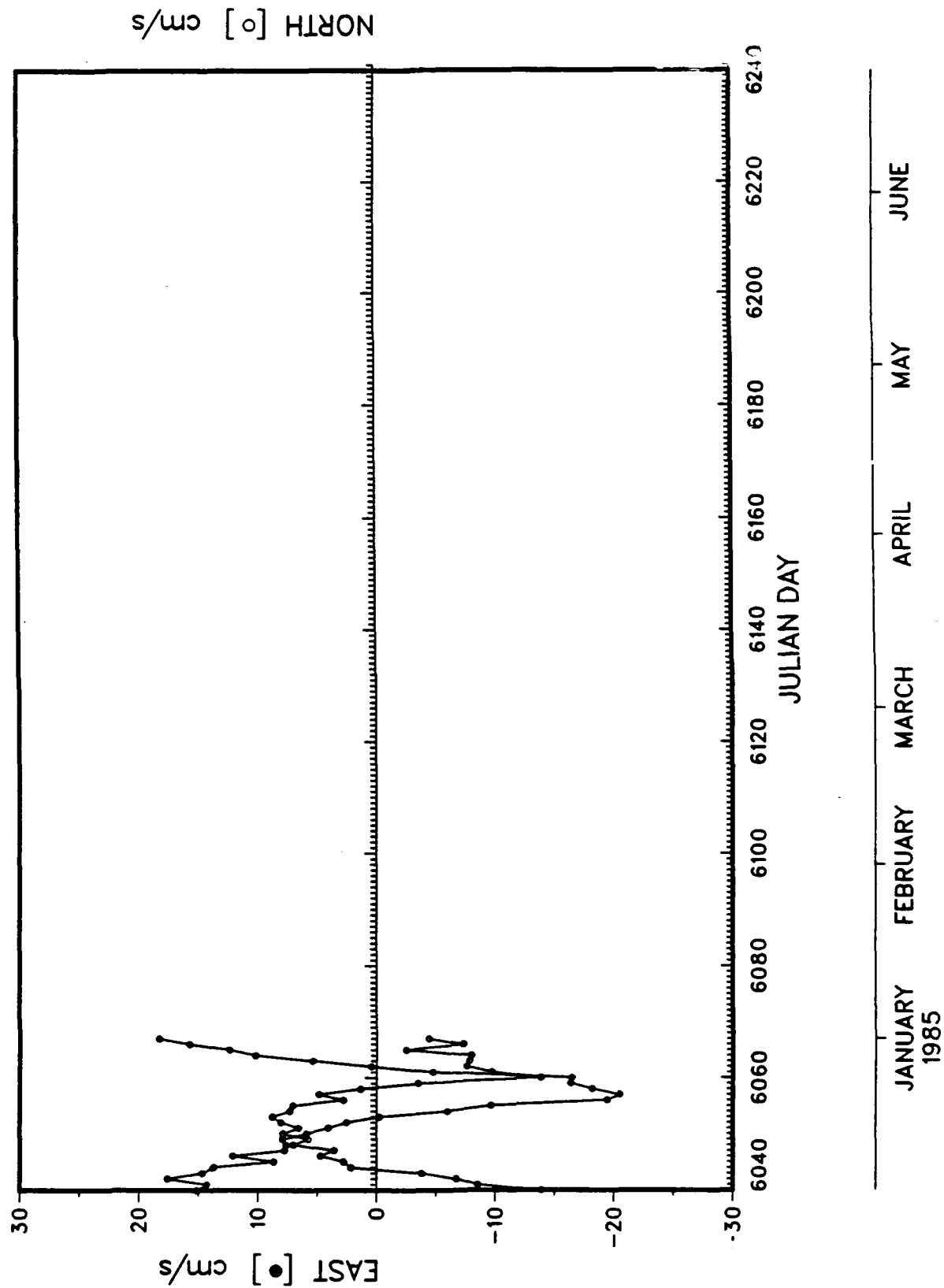


JANUARY FEBRUARY MARCH APRIL MAY JUNE
1985

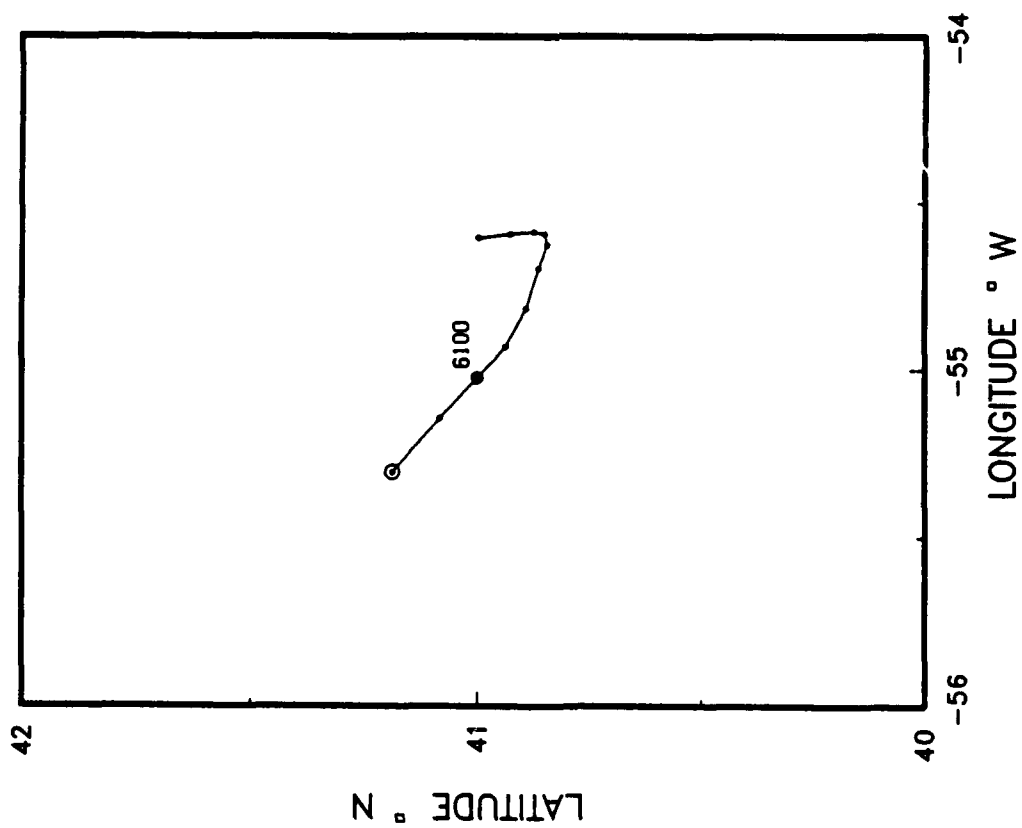
GUSREX 169C



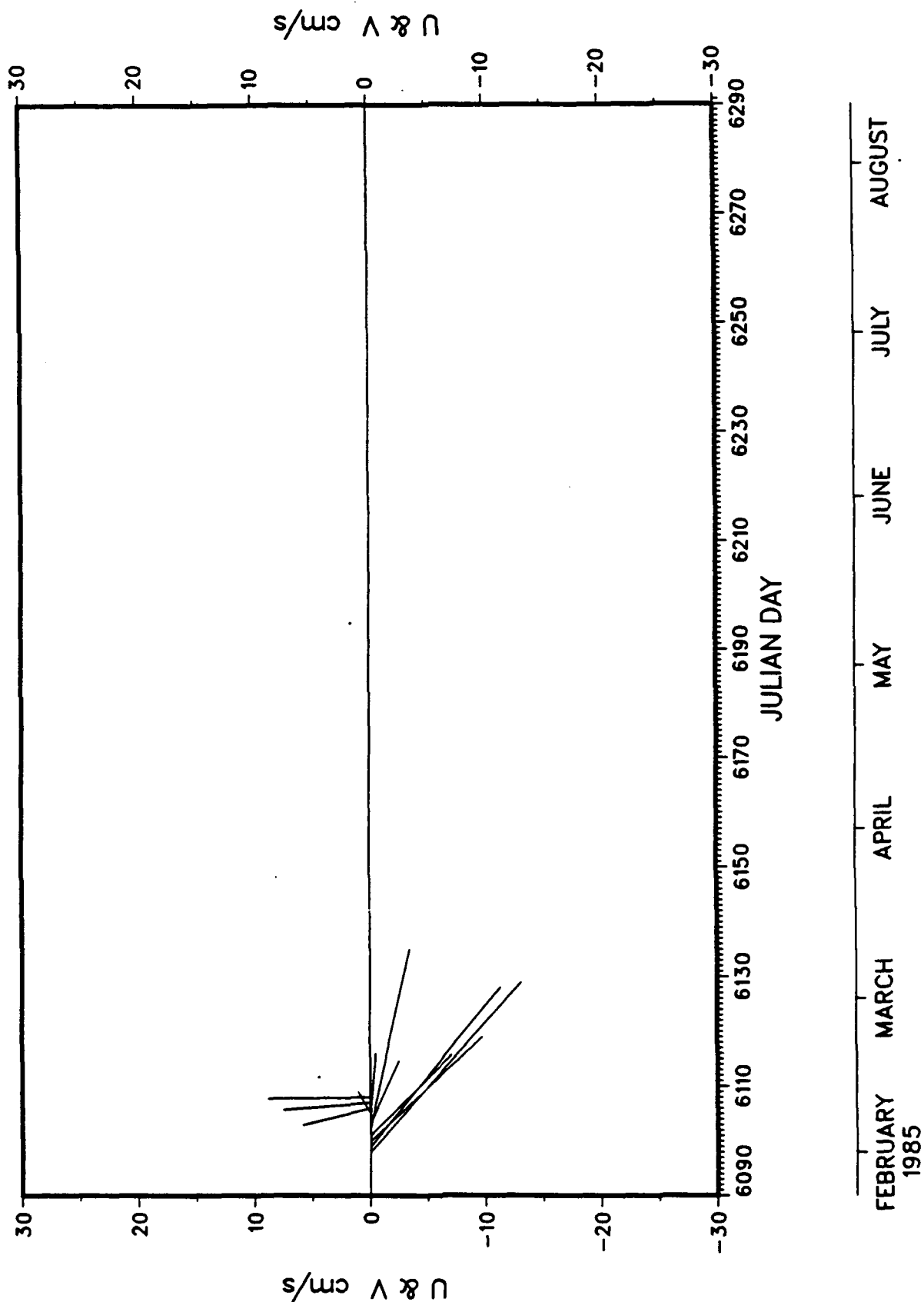
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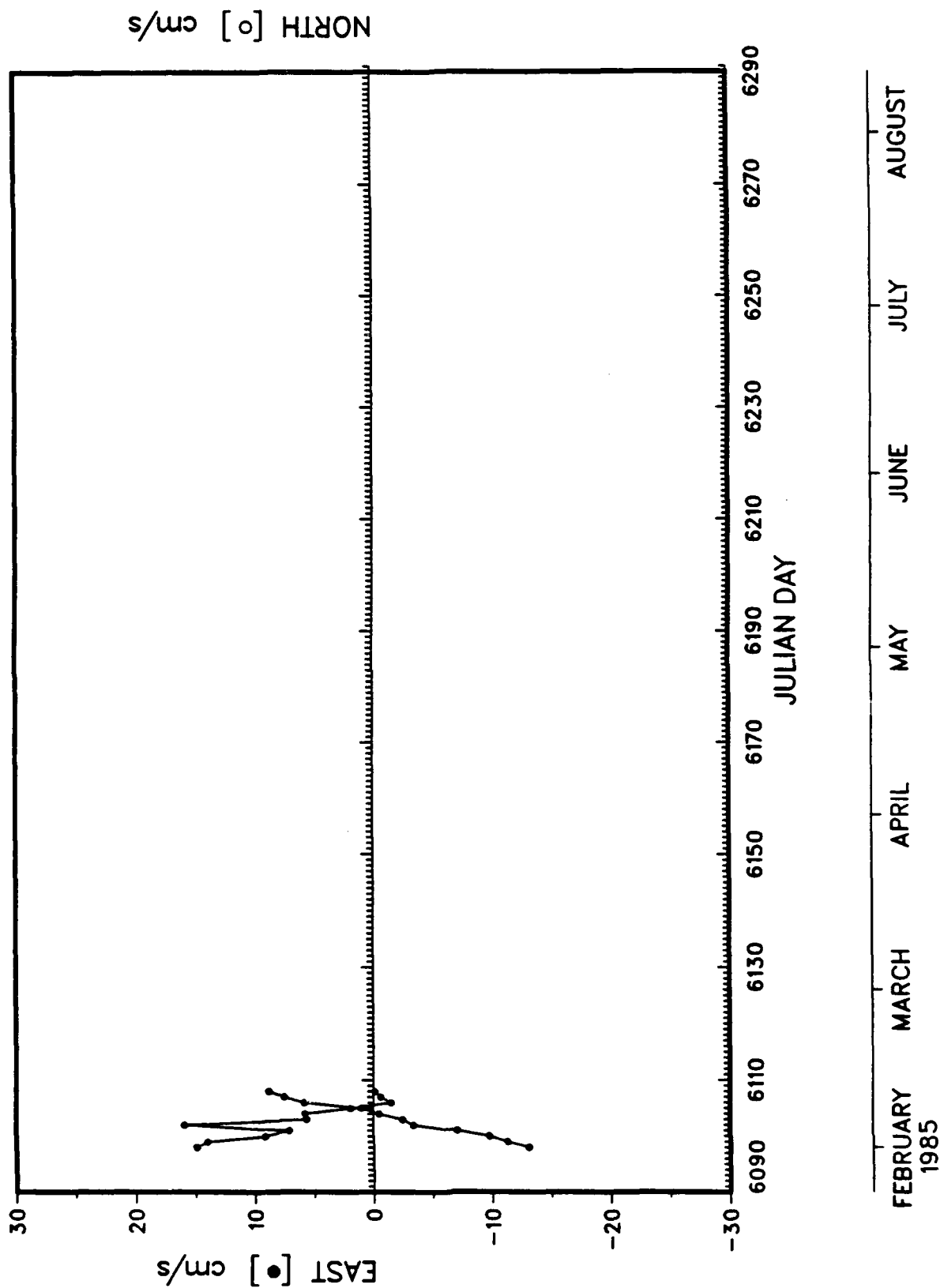
GUSREX 169D

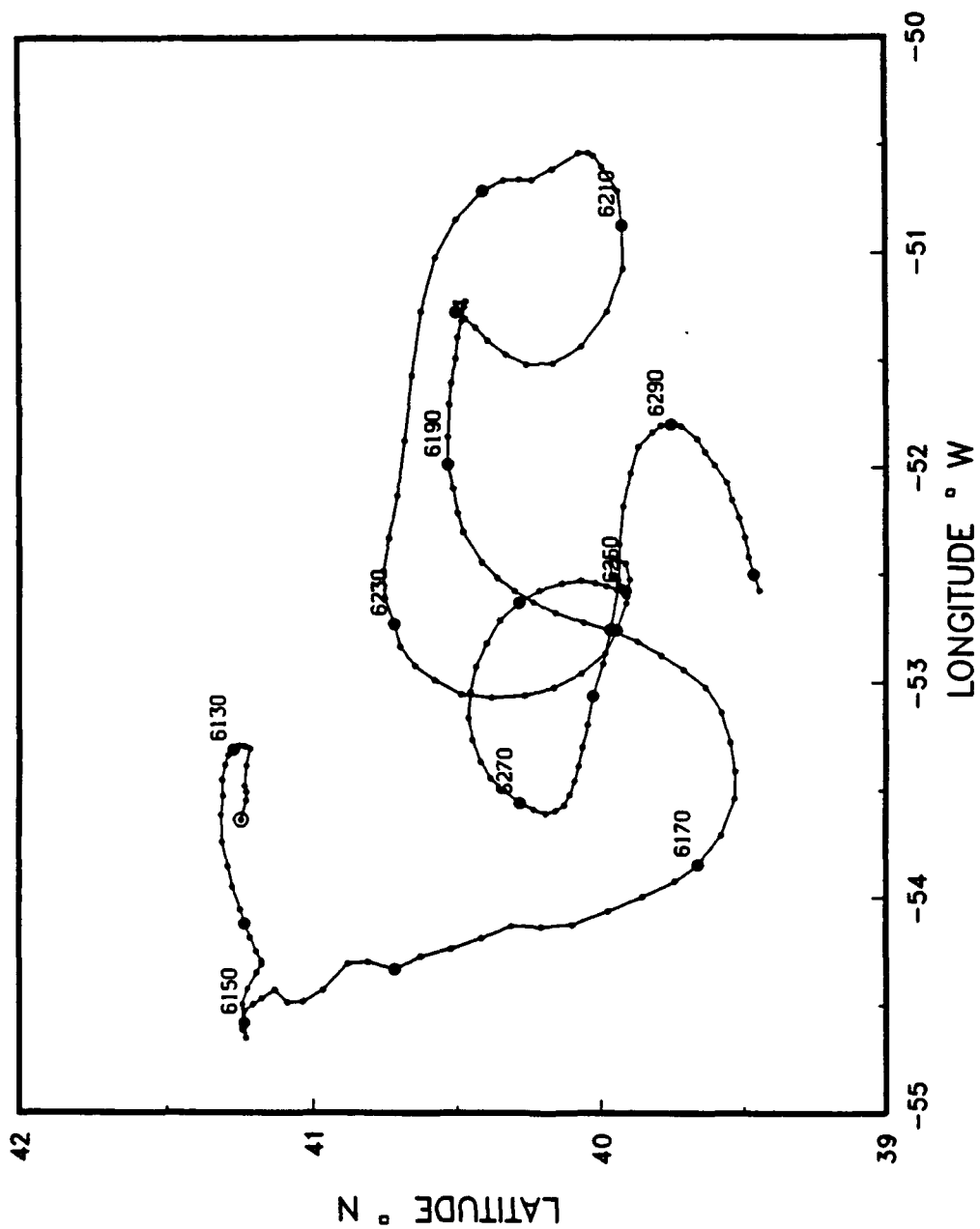


GUSREX 169D

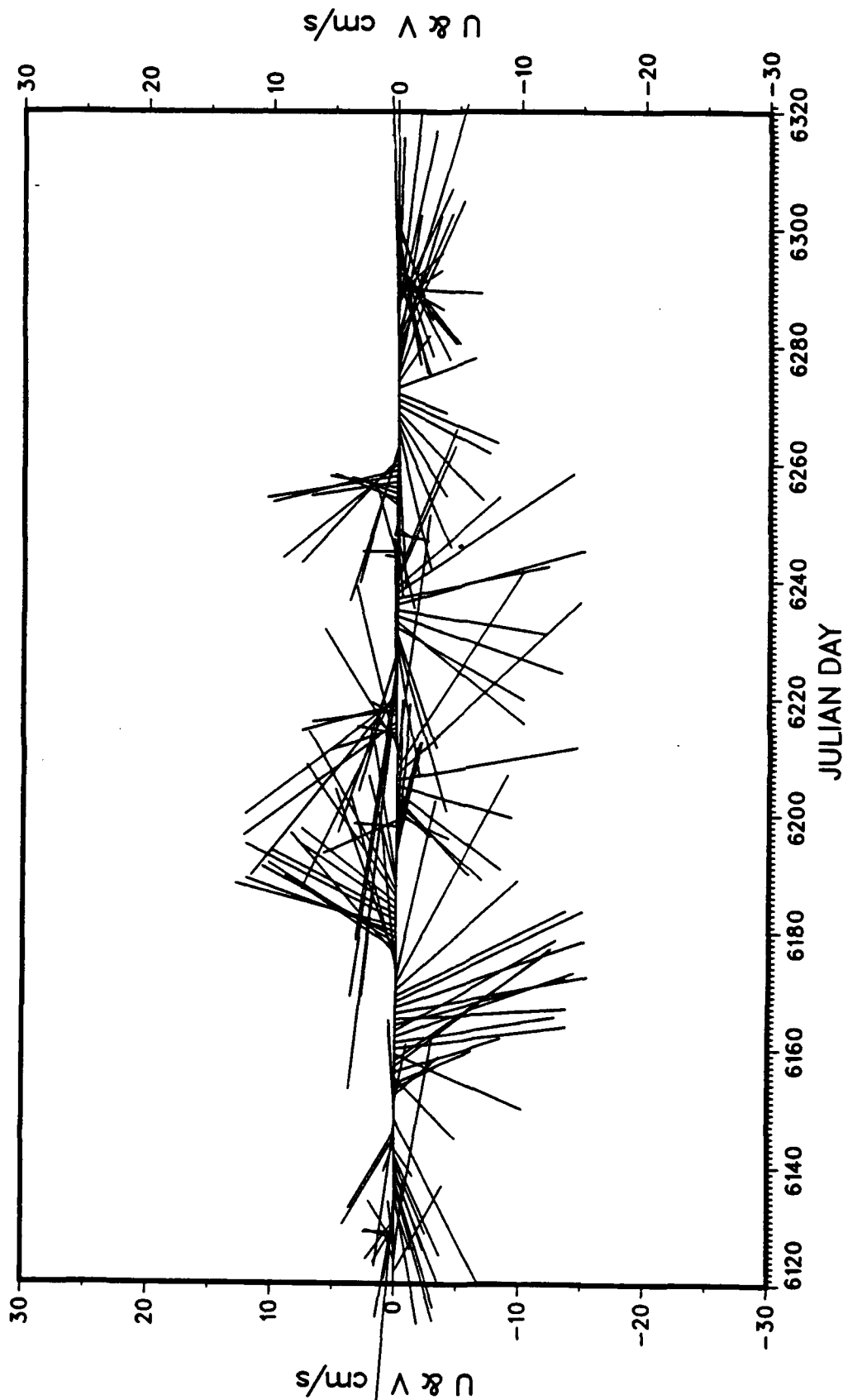


GUSREX 169D

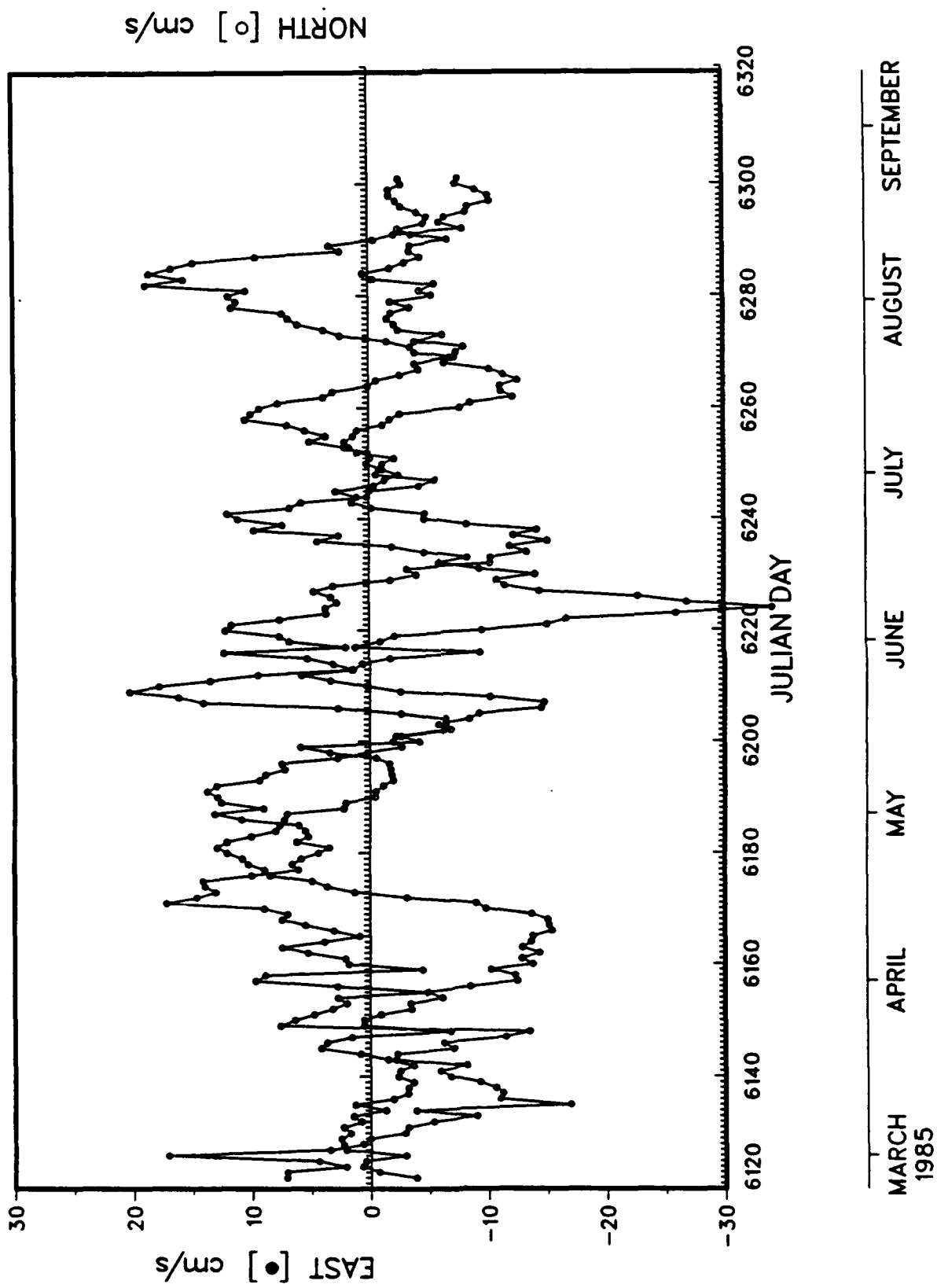




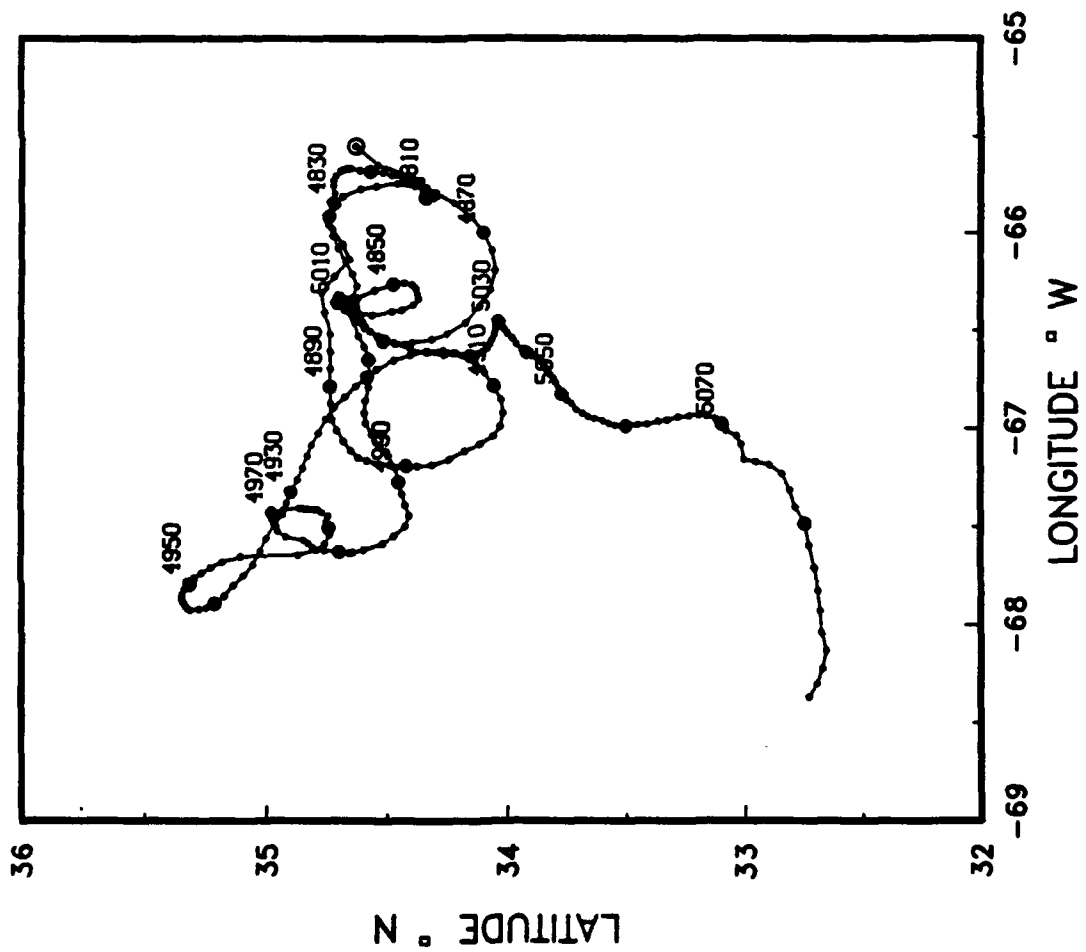
GUSREX 169E



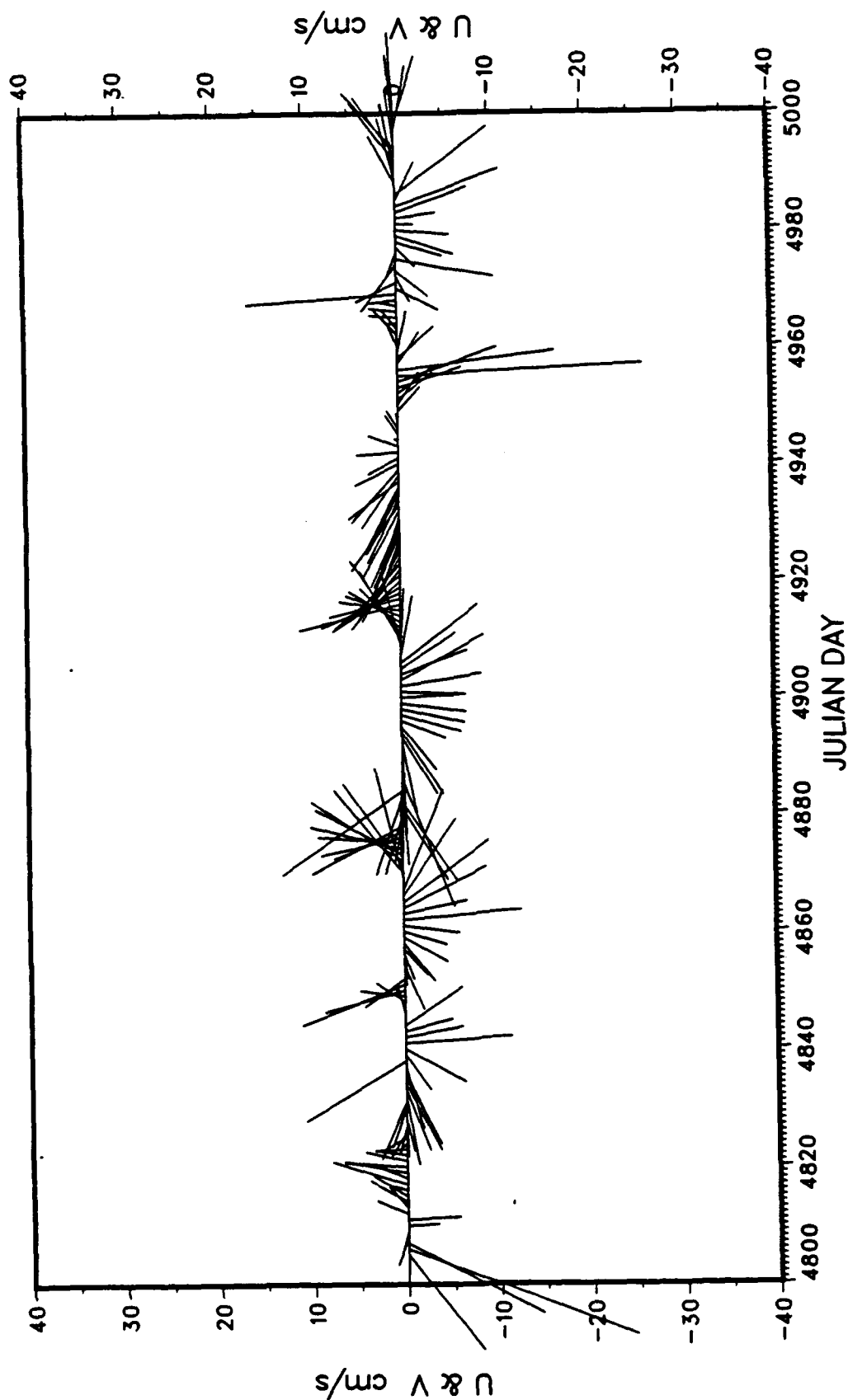
MARCH 1985 APRIL MAY JUNE JULY AUGUST SEPTEMBER



GUSREX 170A

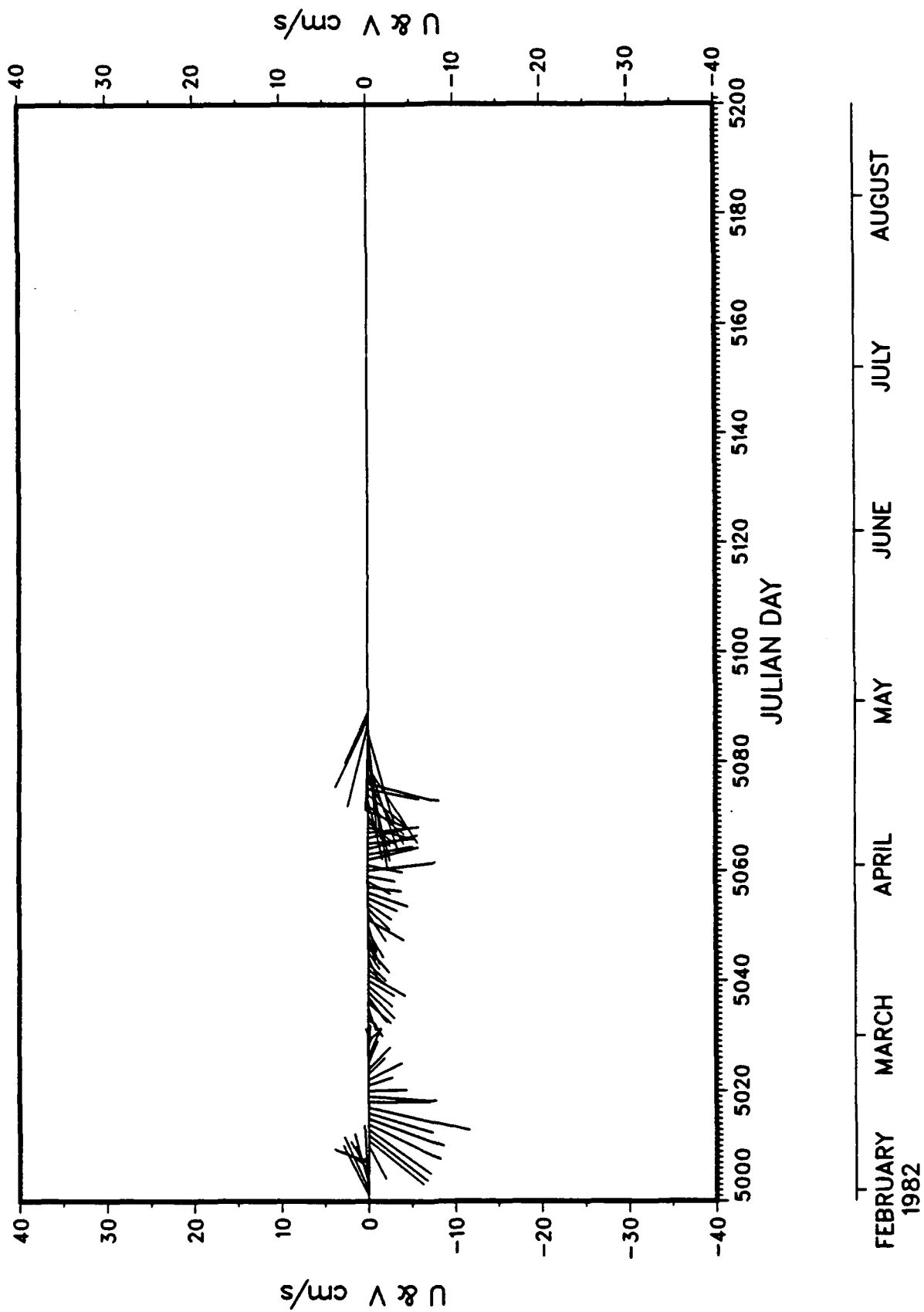


GUSREX 170A

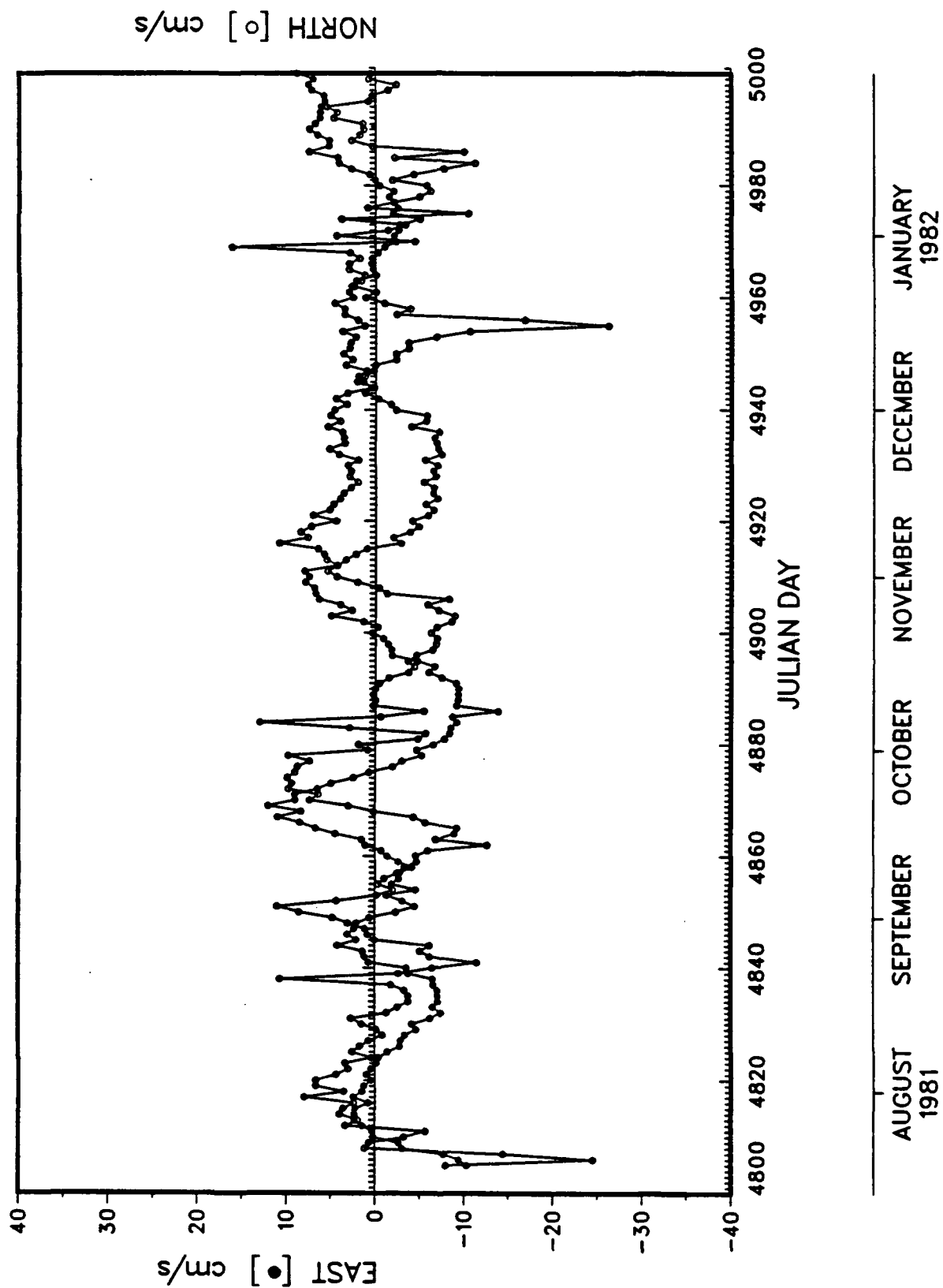


AUGUST 1981 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1982

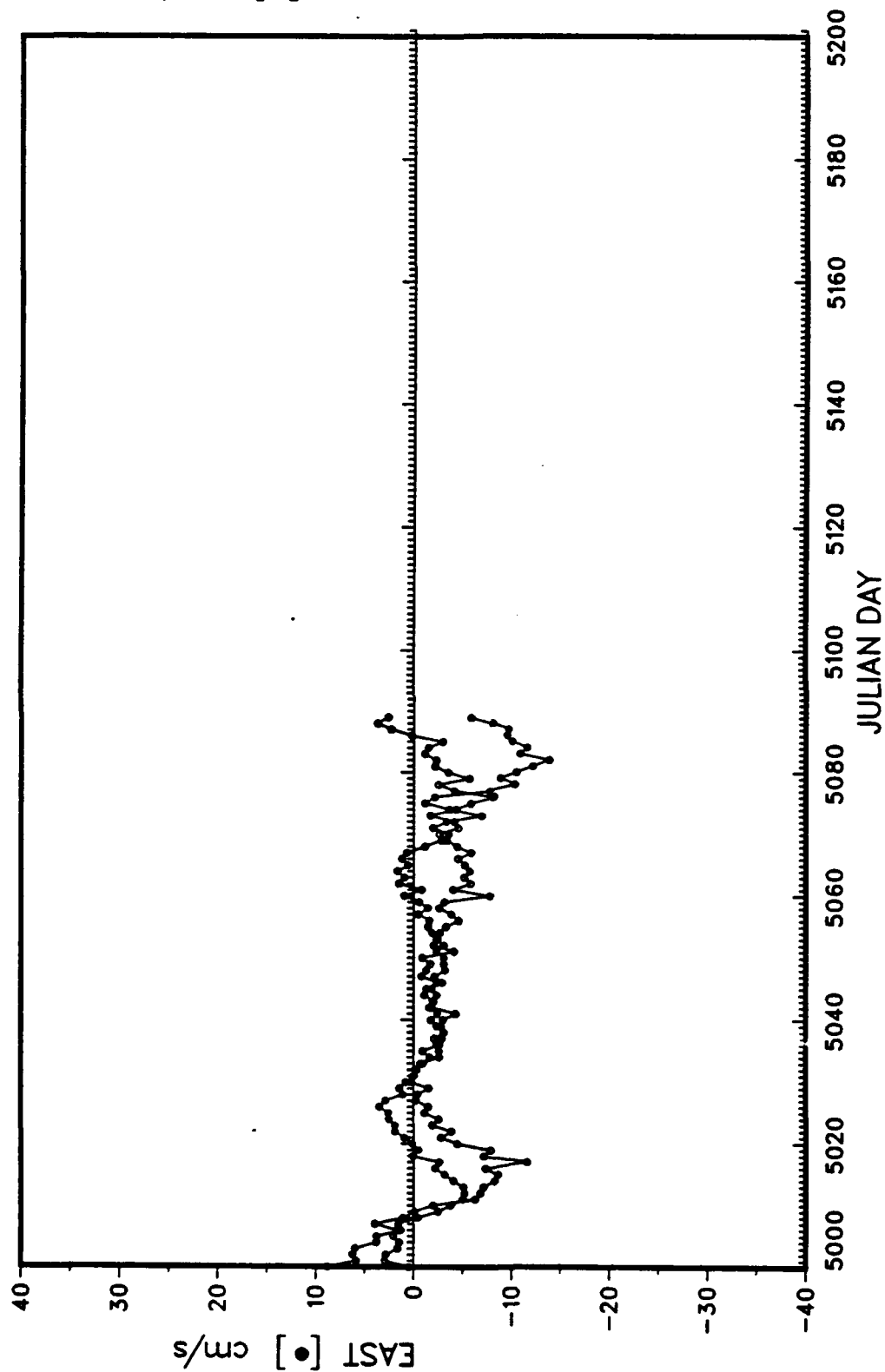
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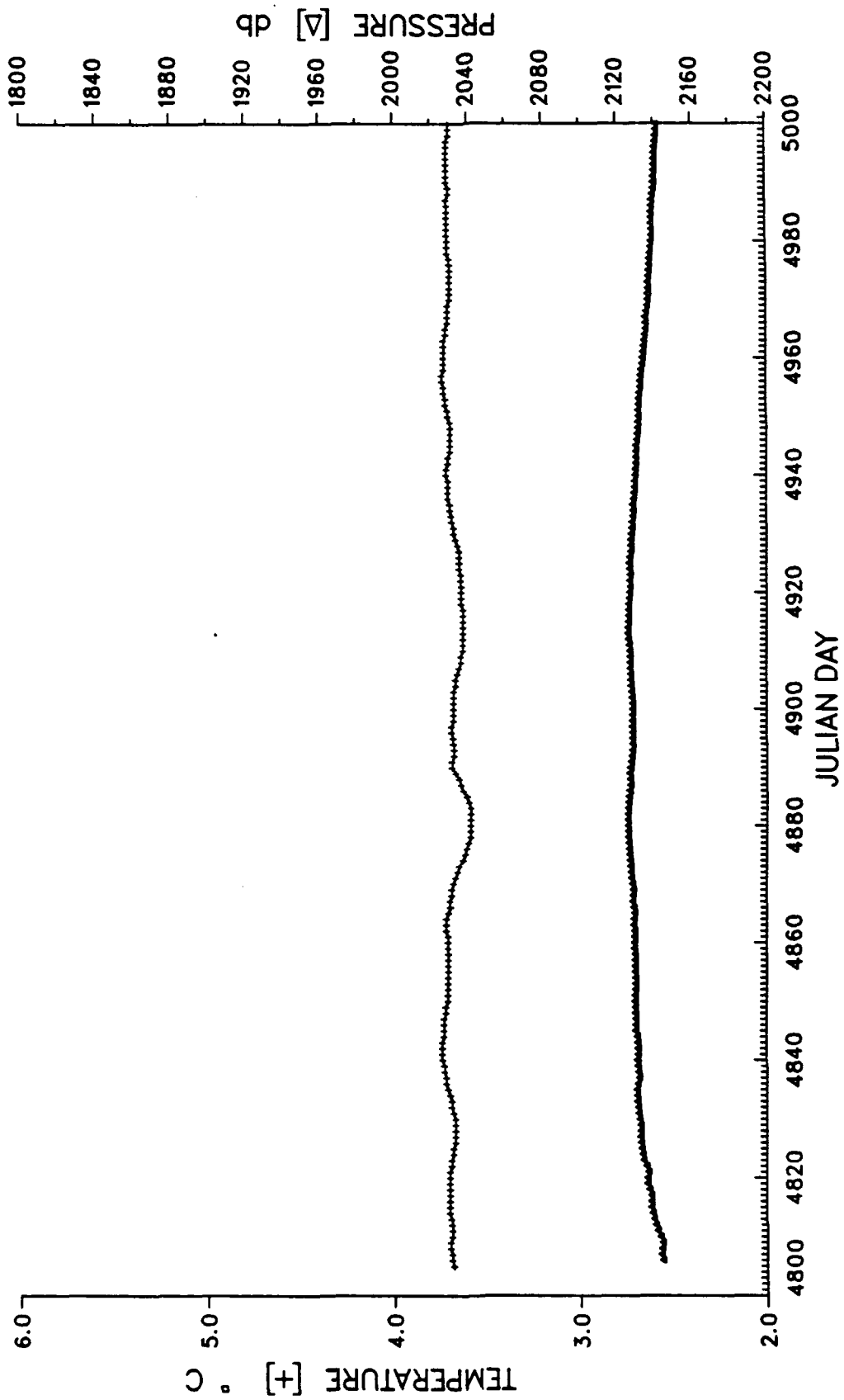


GUSREX 170A

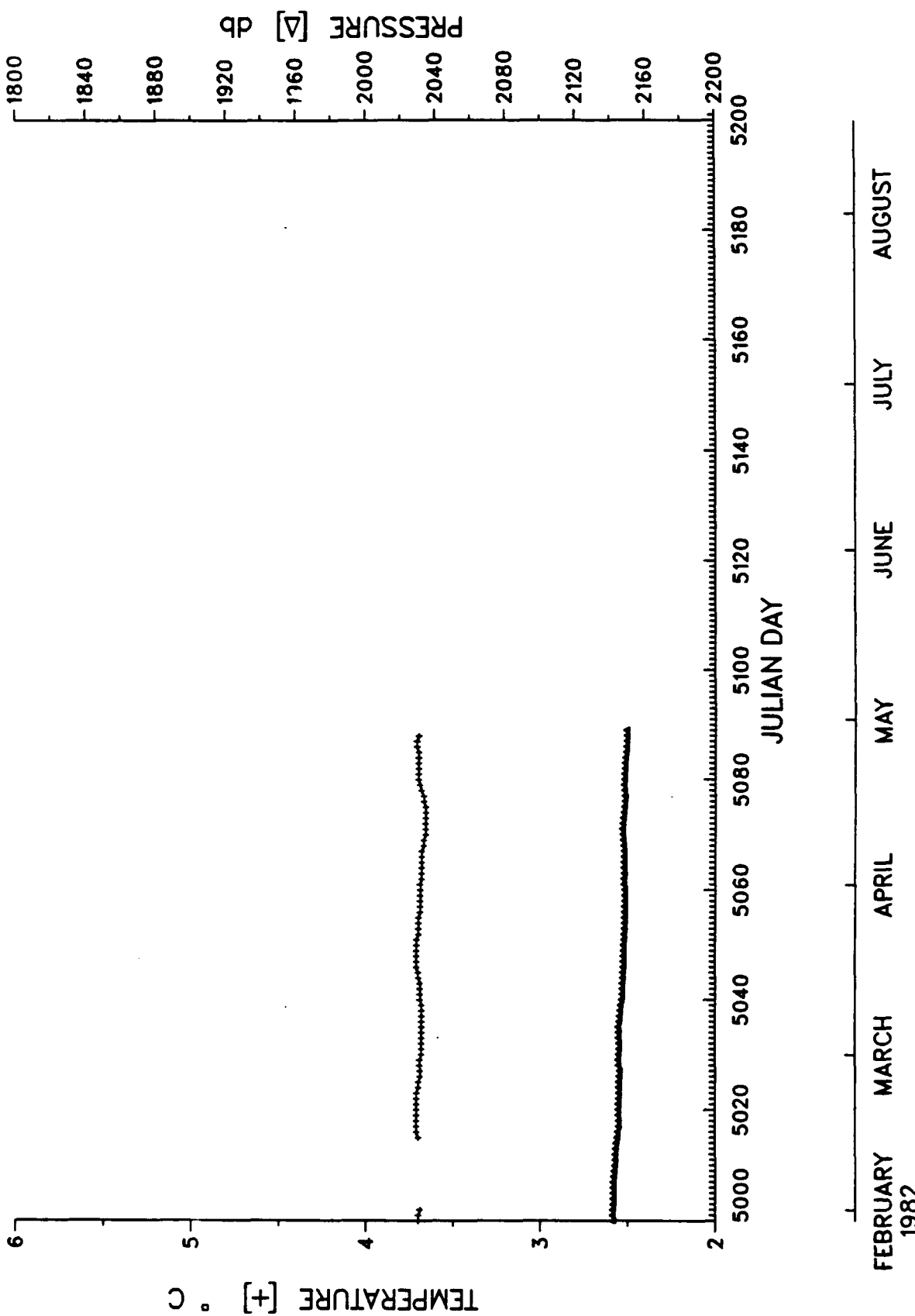


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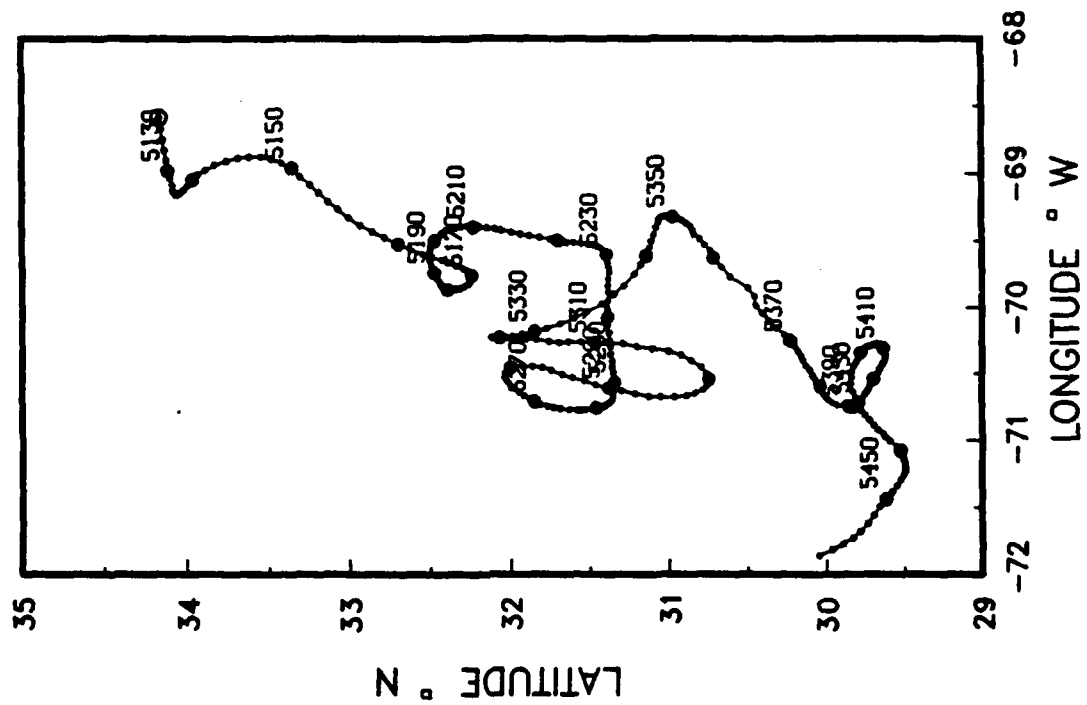




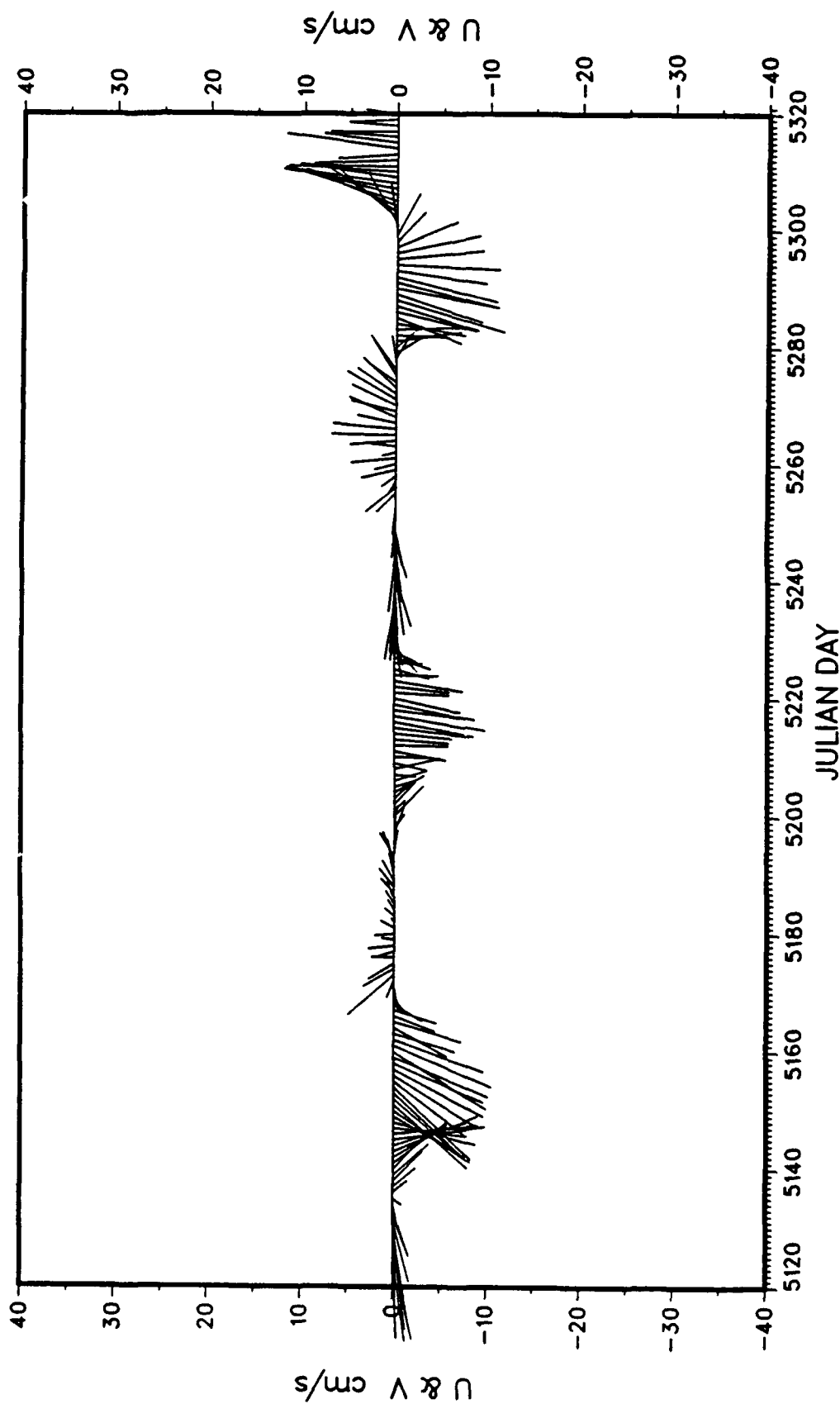
170A



GUSREX 170B

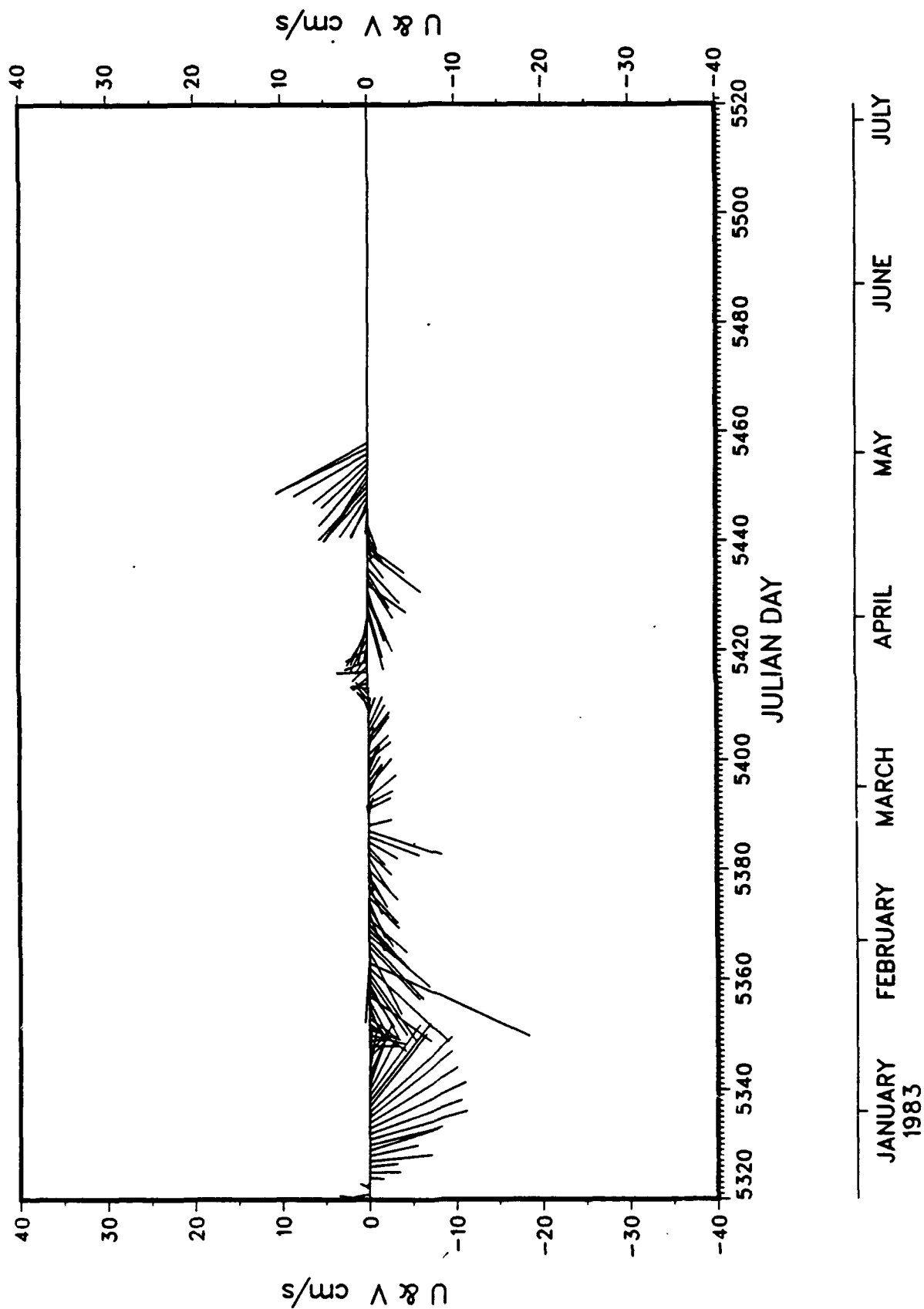


GUSREX 170B

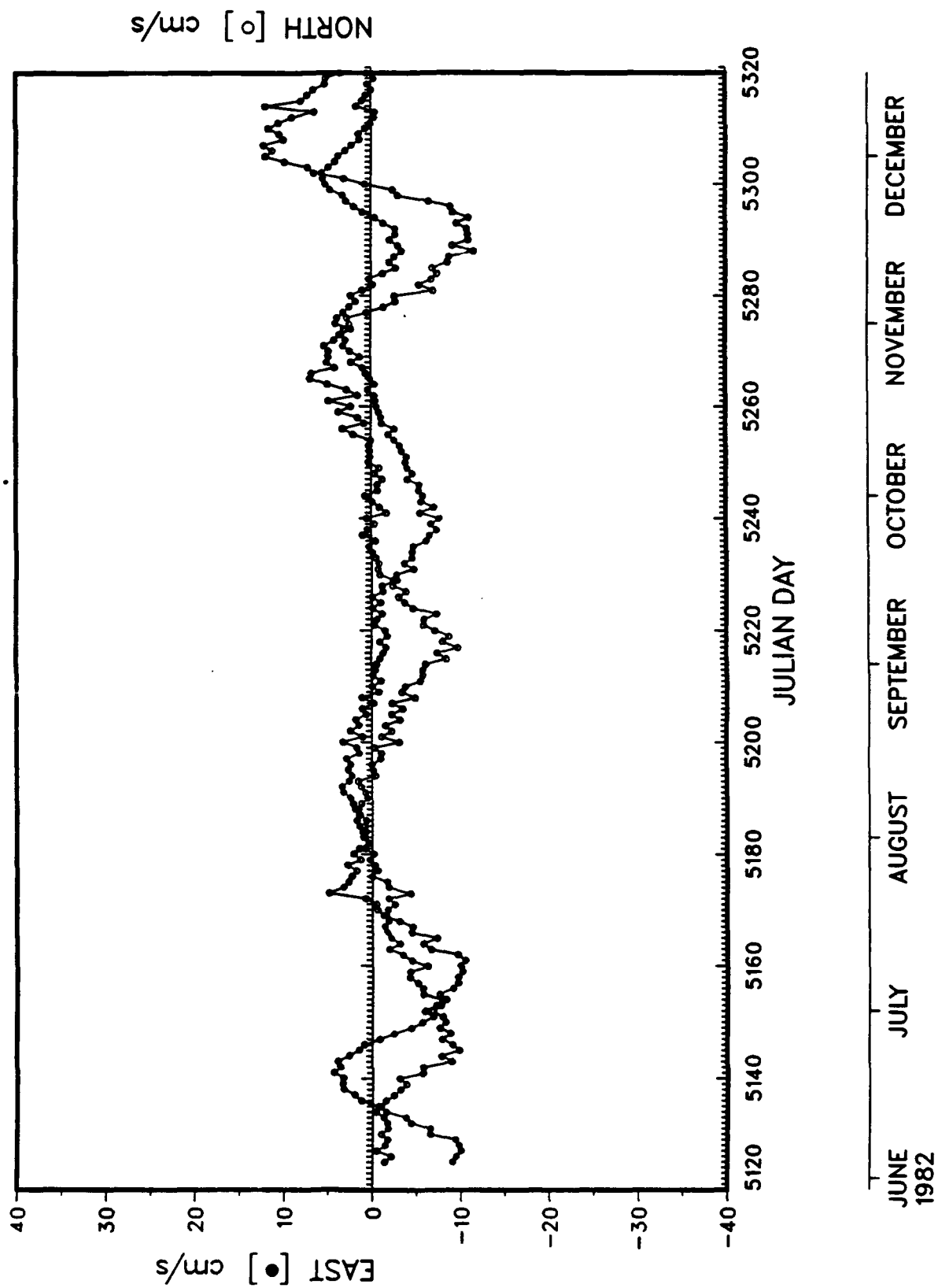


JUNE 1982 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

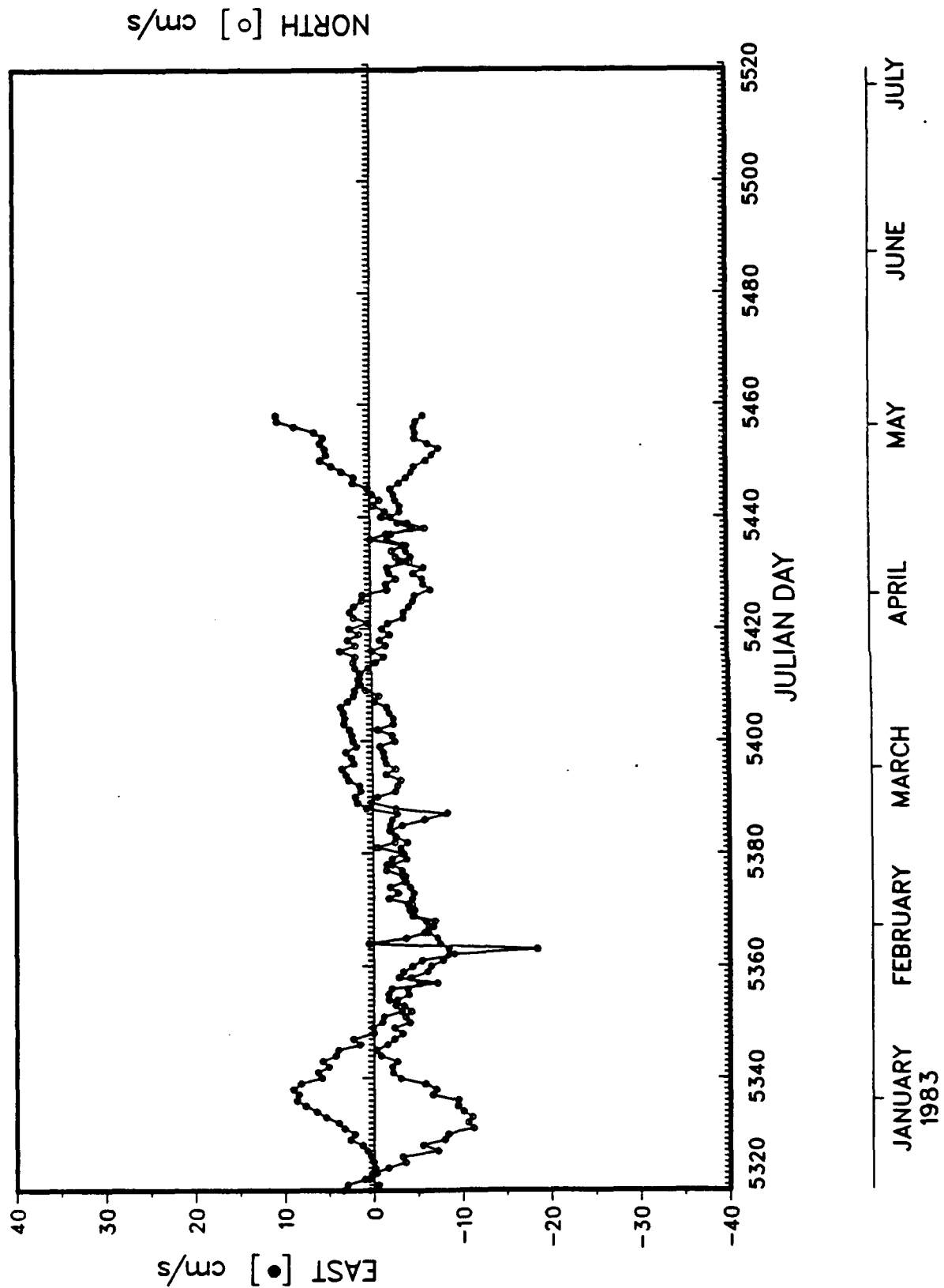
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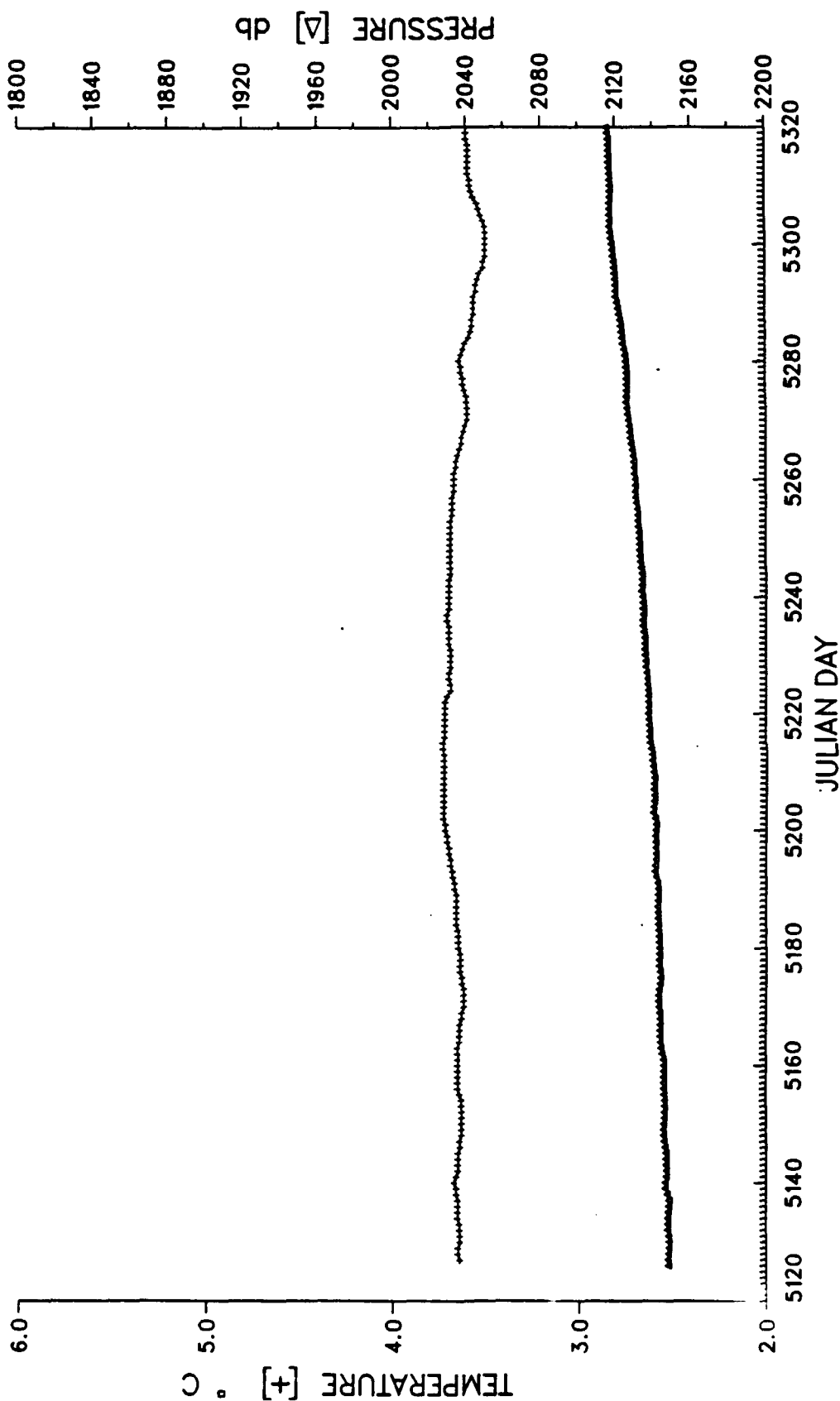
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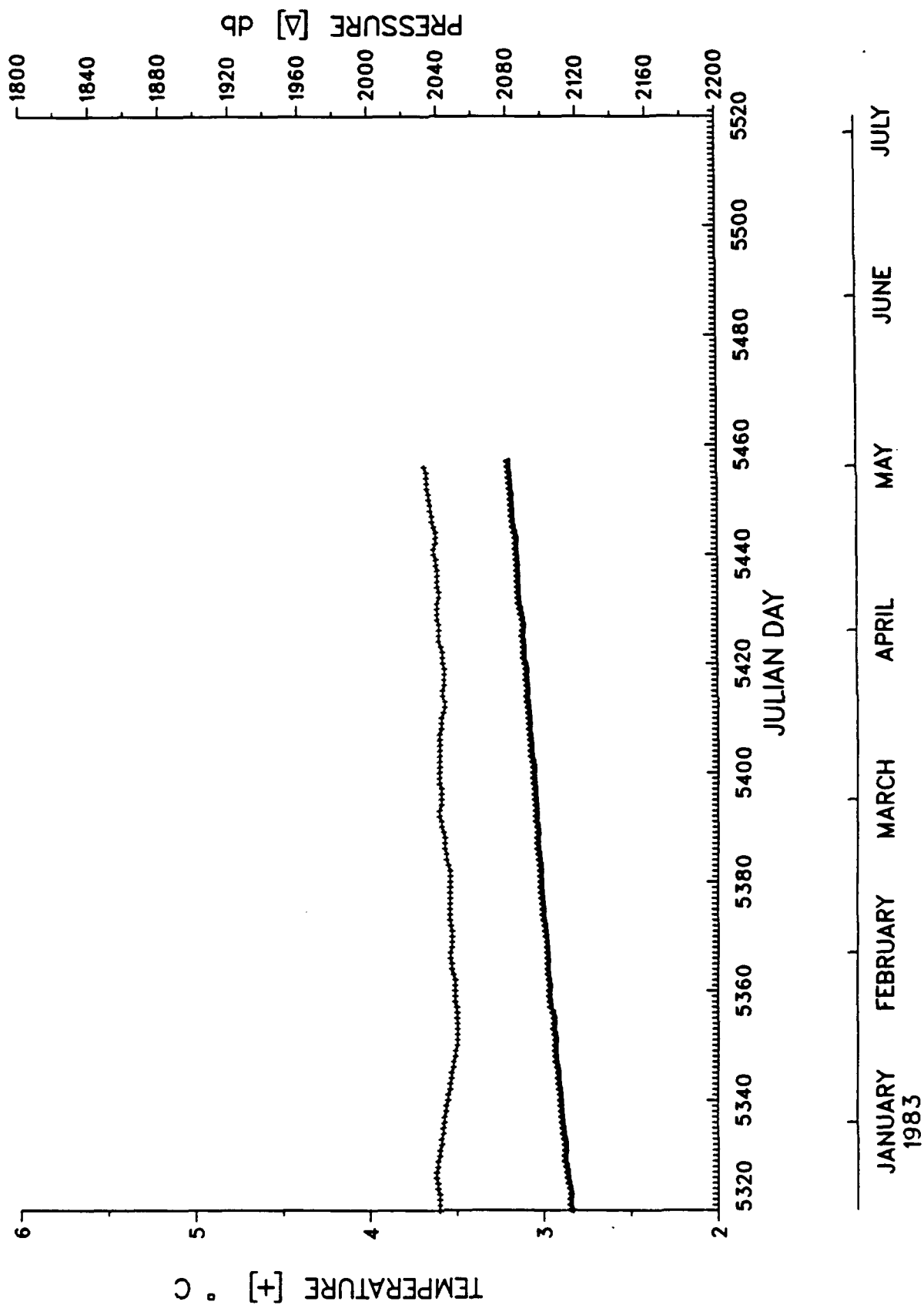
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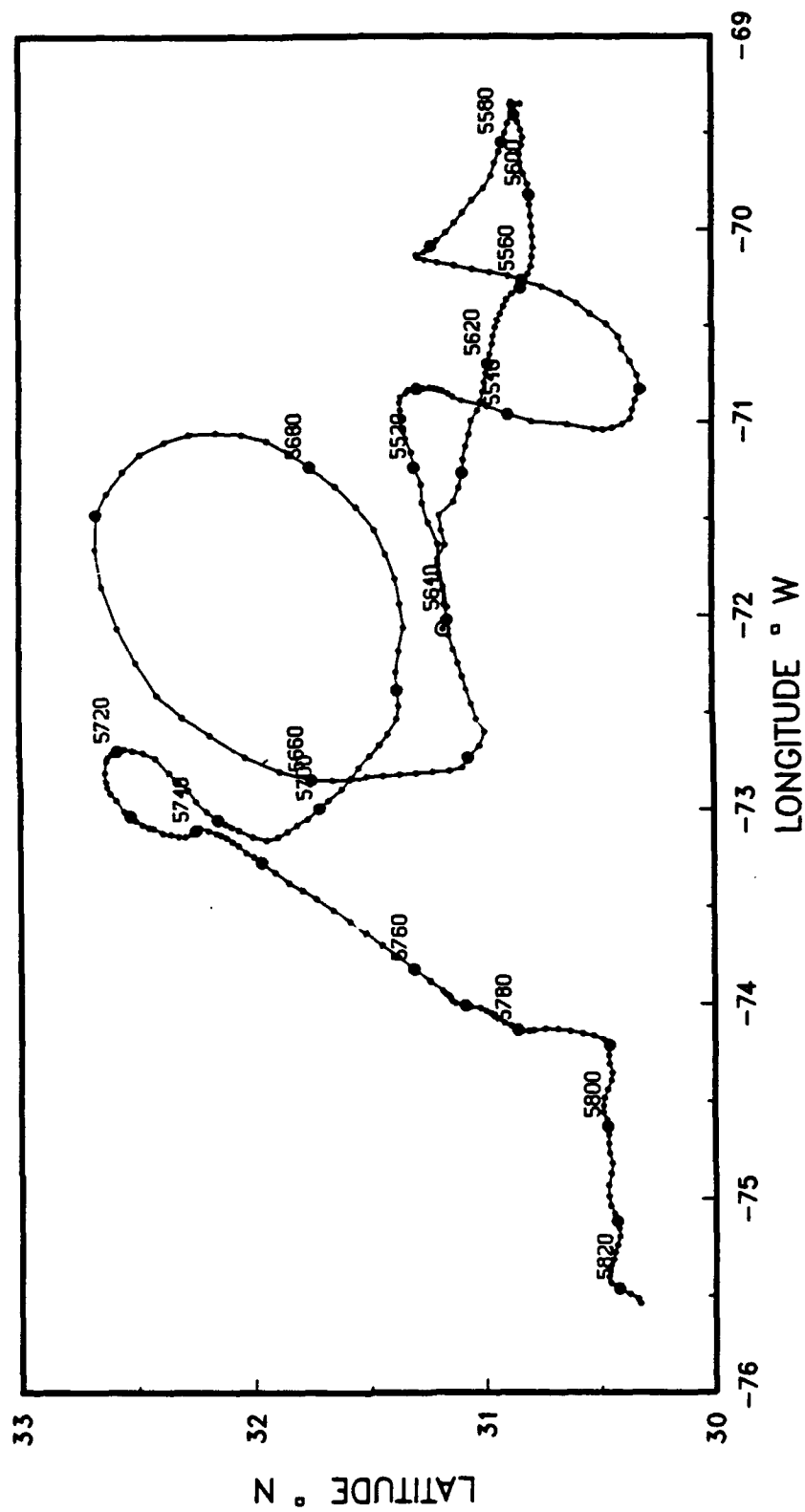
GUSREX 170B



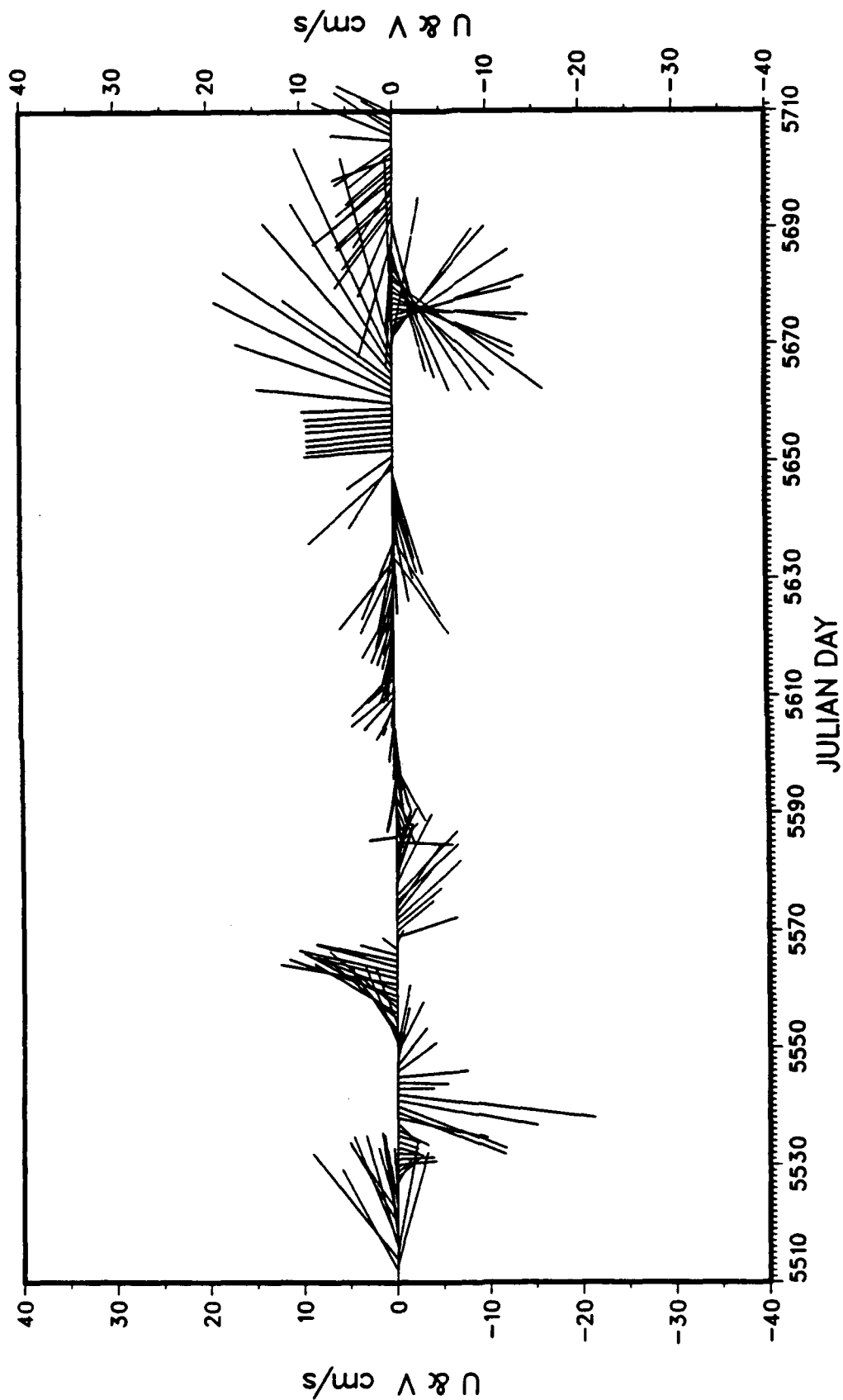
GUSREX 170B



GUSREX 170C



GUSREX 170C



JANUARY
1984

DECEMBER

NOVEMBER

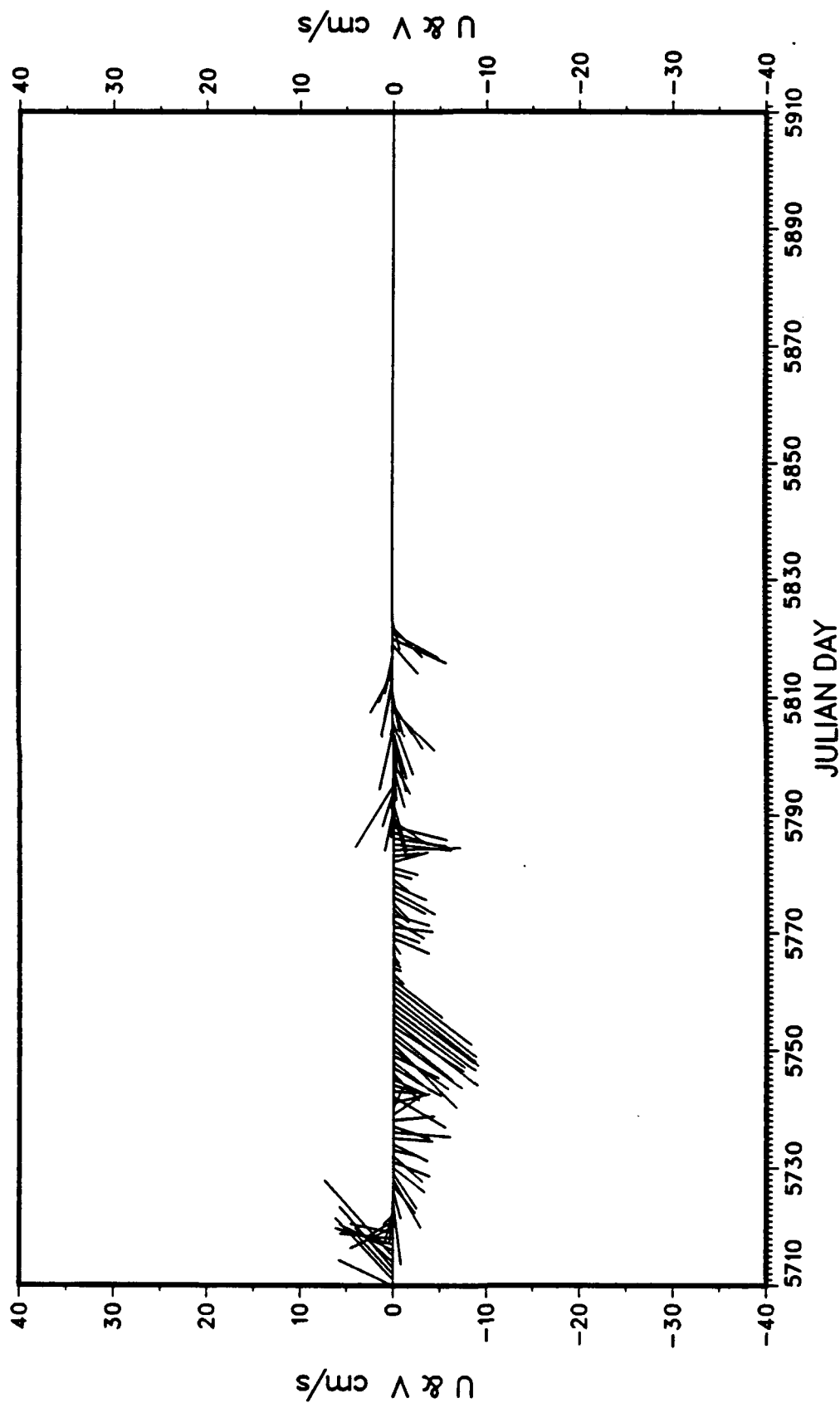
OCTOBER

SEPTEMBER

AUGUST

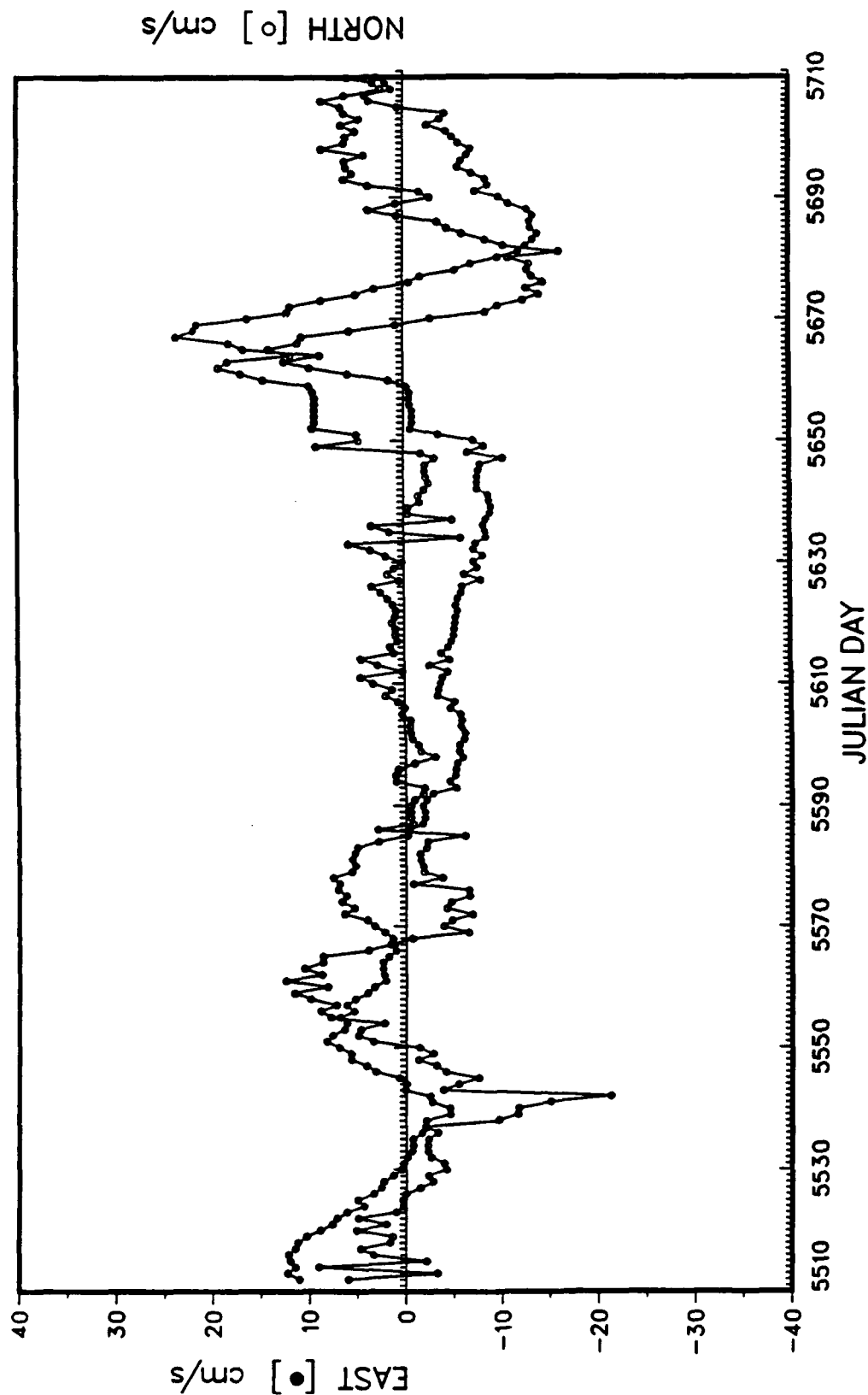
JULY
1983

GUSREX 170C

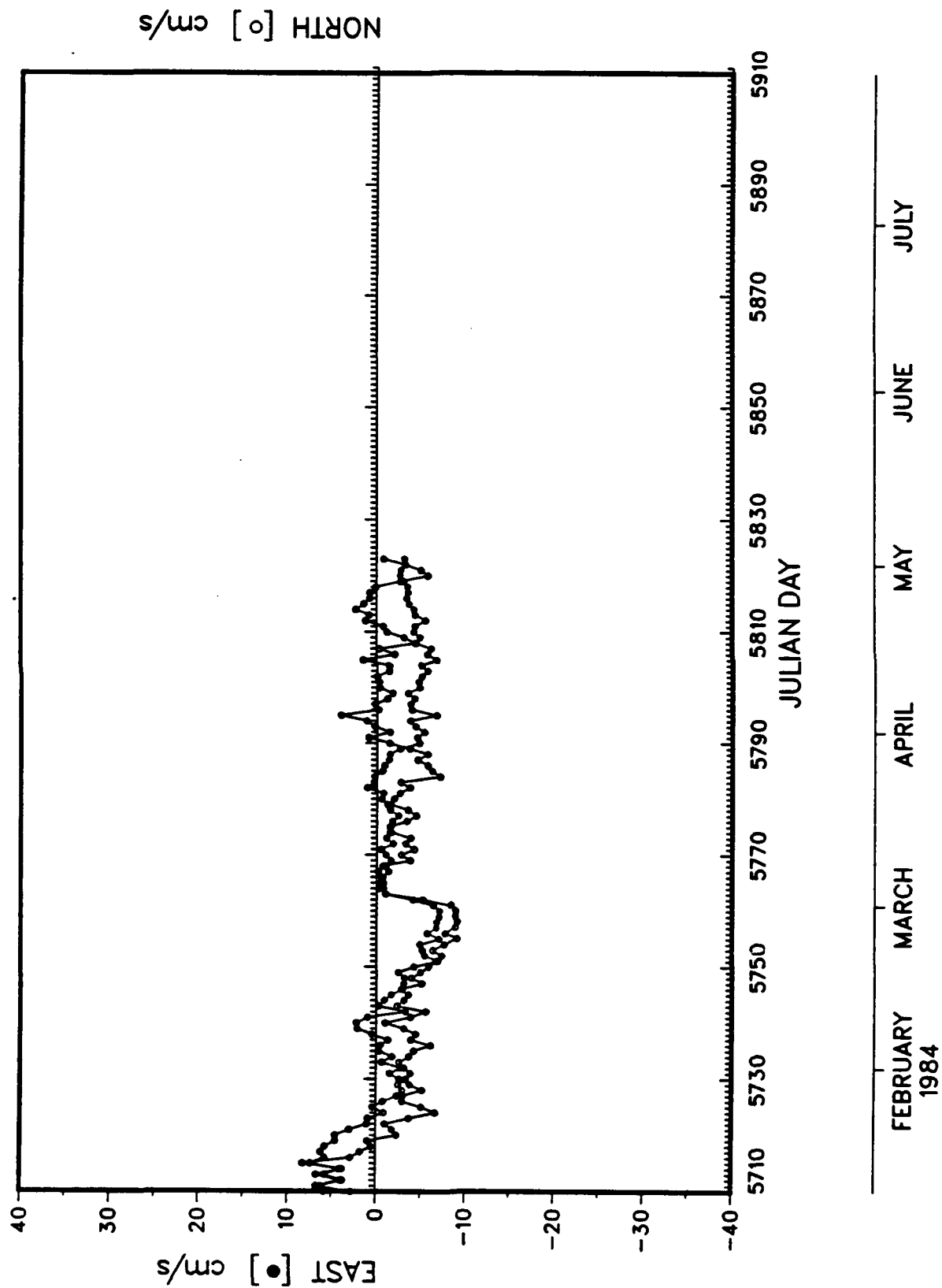


FEBRUARY MARCH APRIL MAY JUNE JULY
1984

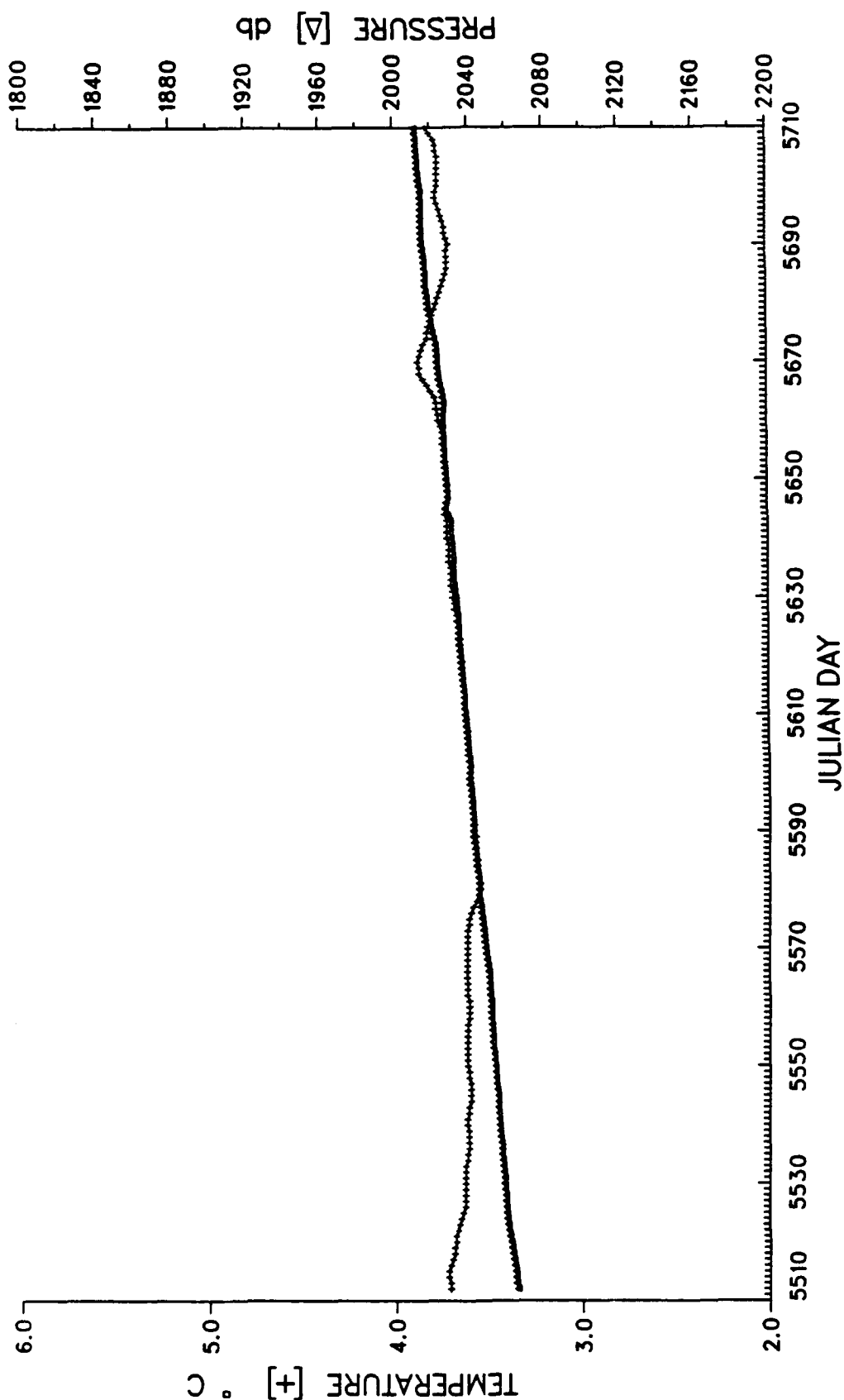
GUSREX 170C



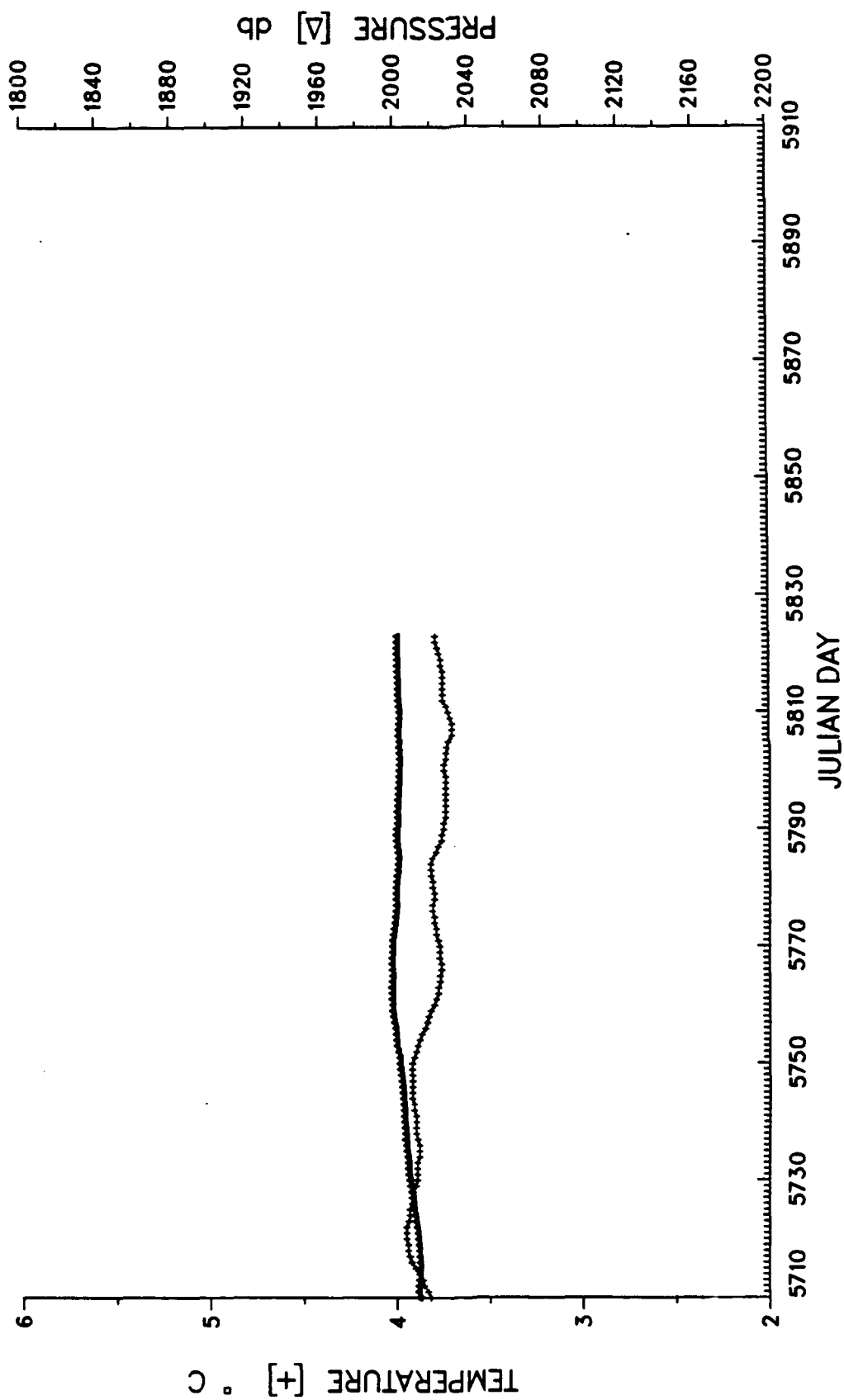
GUSREX 170C



GUSREX 170C

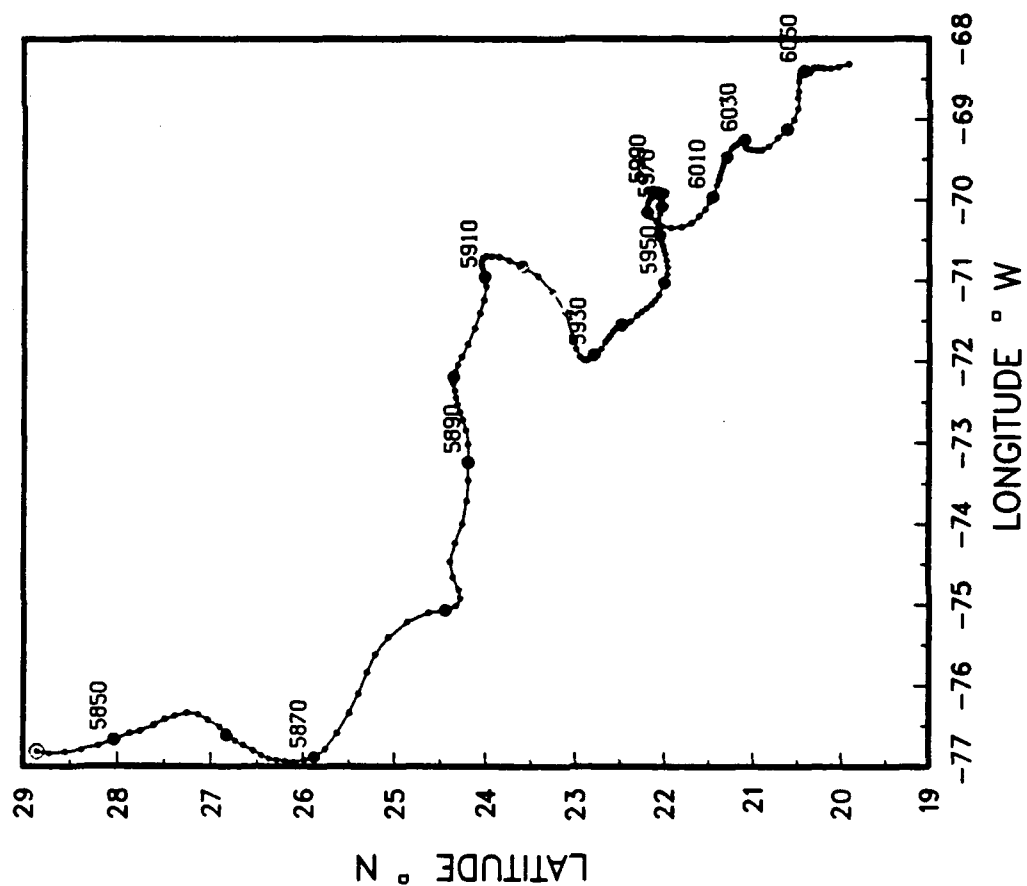


GUSREX 170C

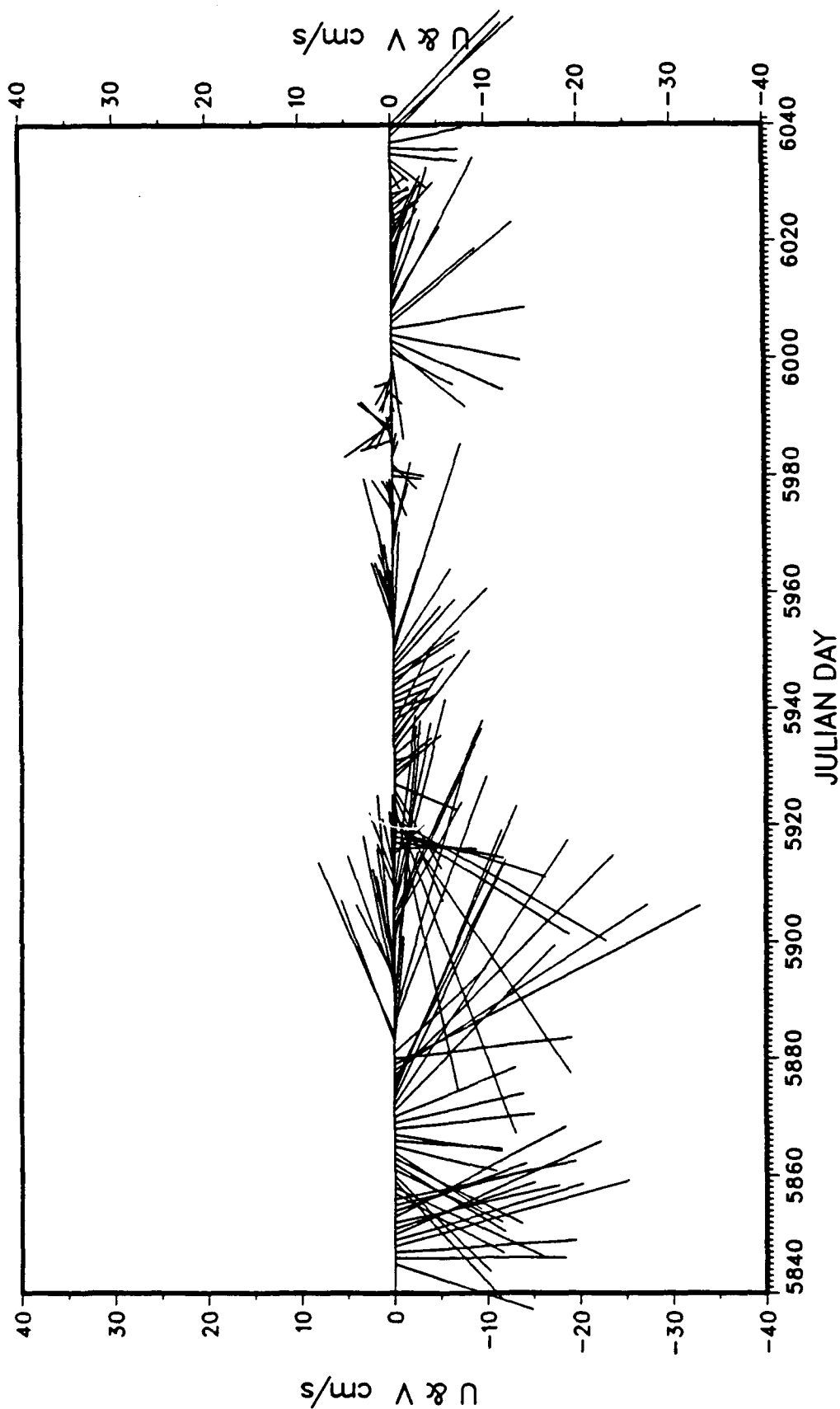


	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY
1984						

GUSREX 170D

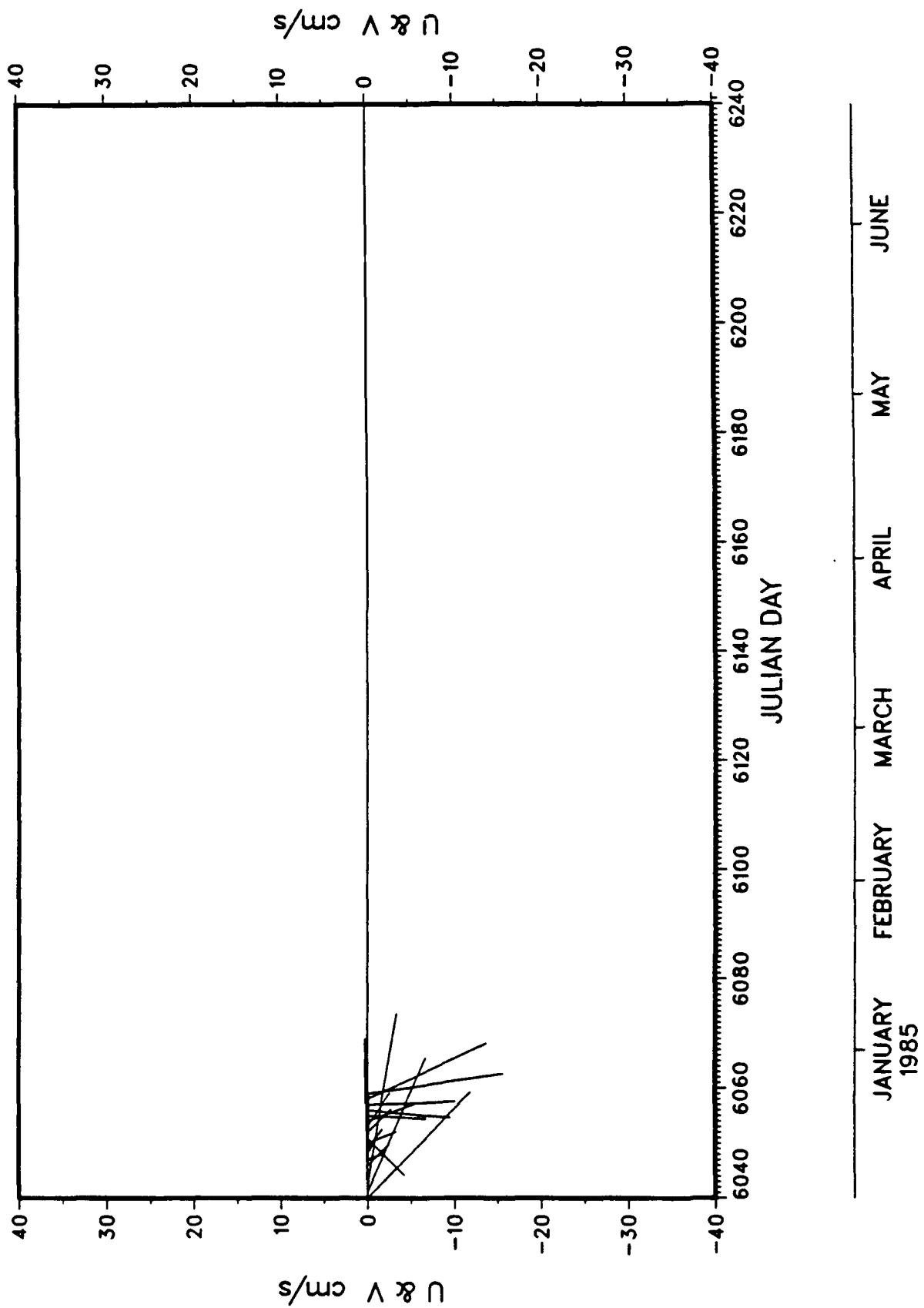


GUSREX 170D

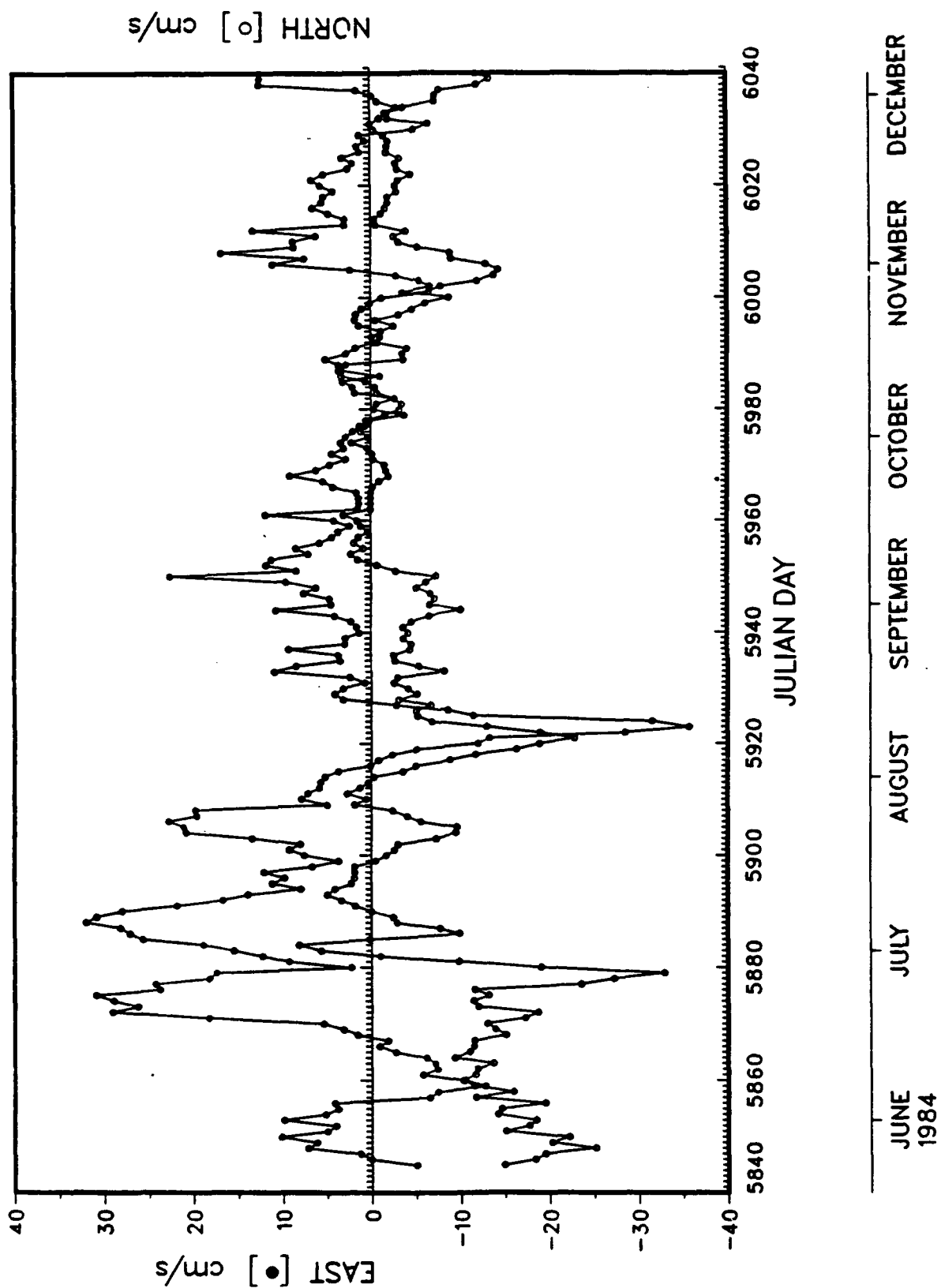


JUNE 1984 JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

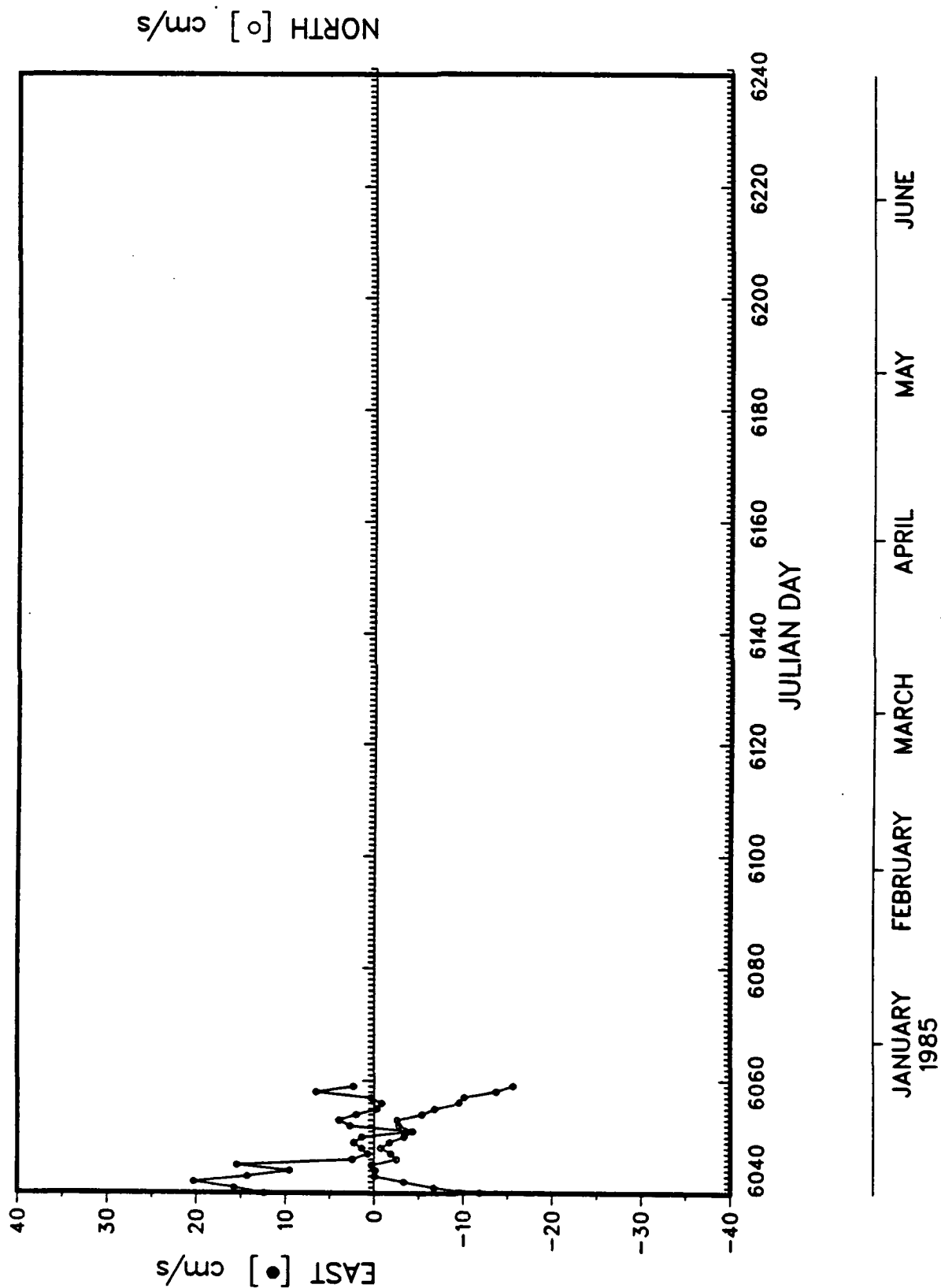
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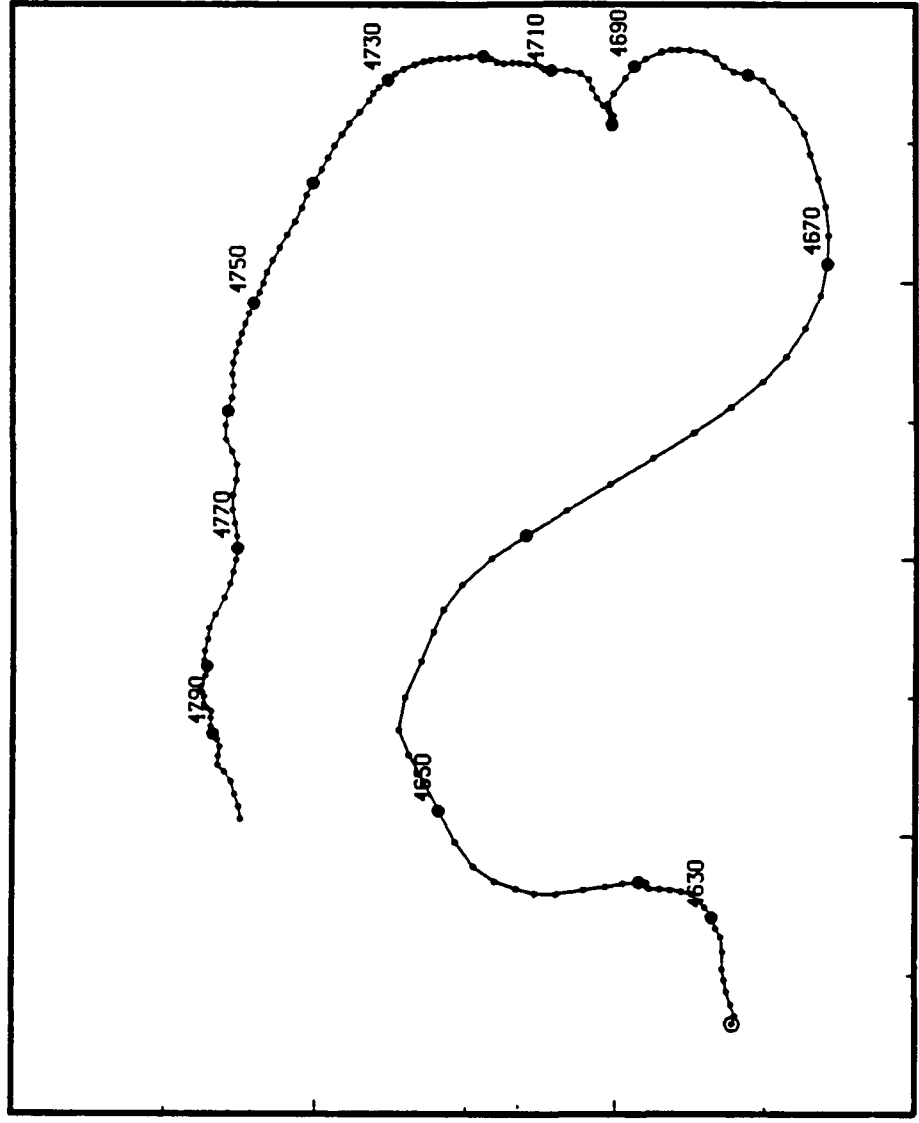


GUSREX 170D

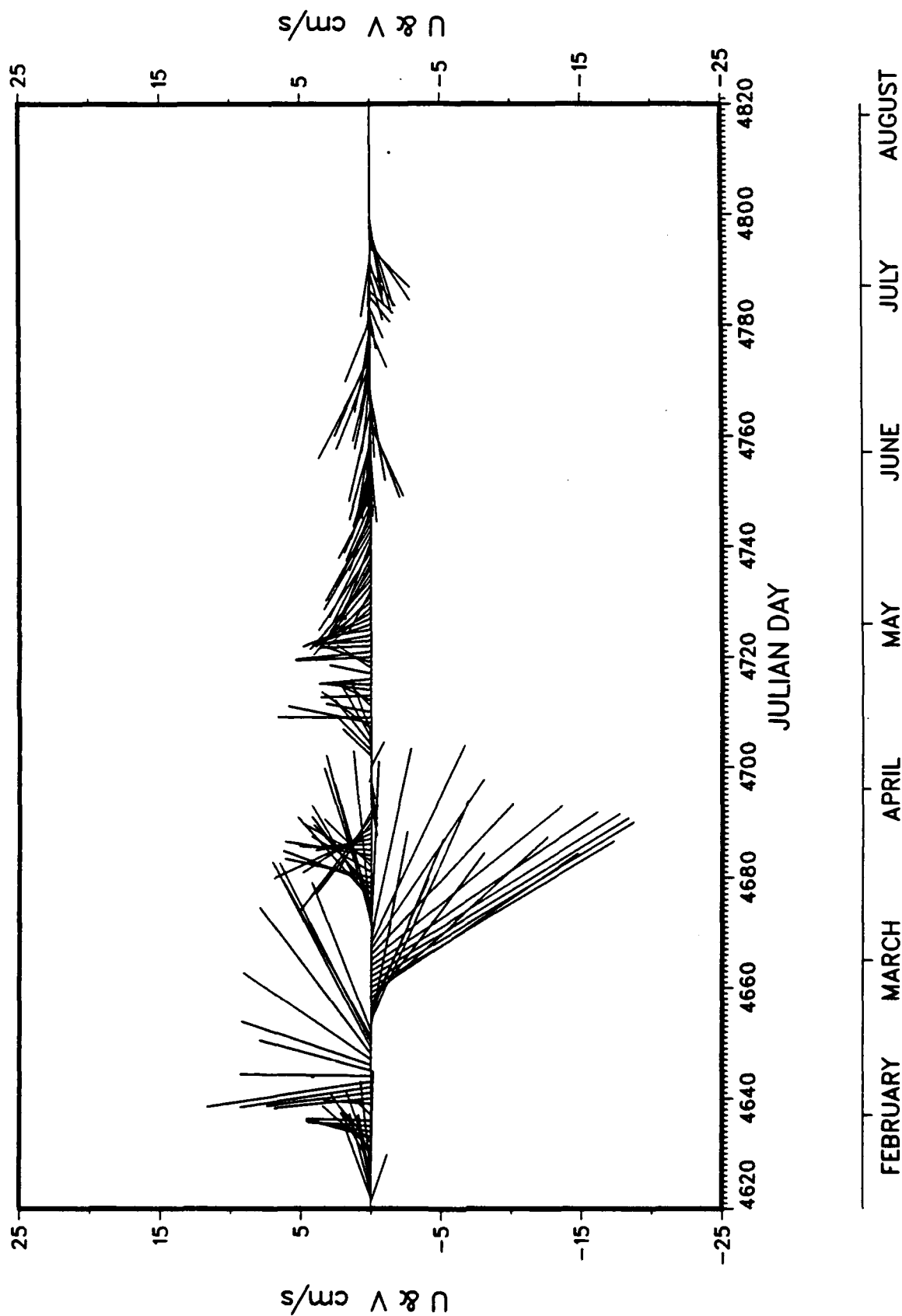


GUSREX 170D



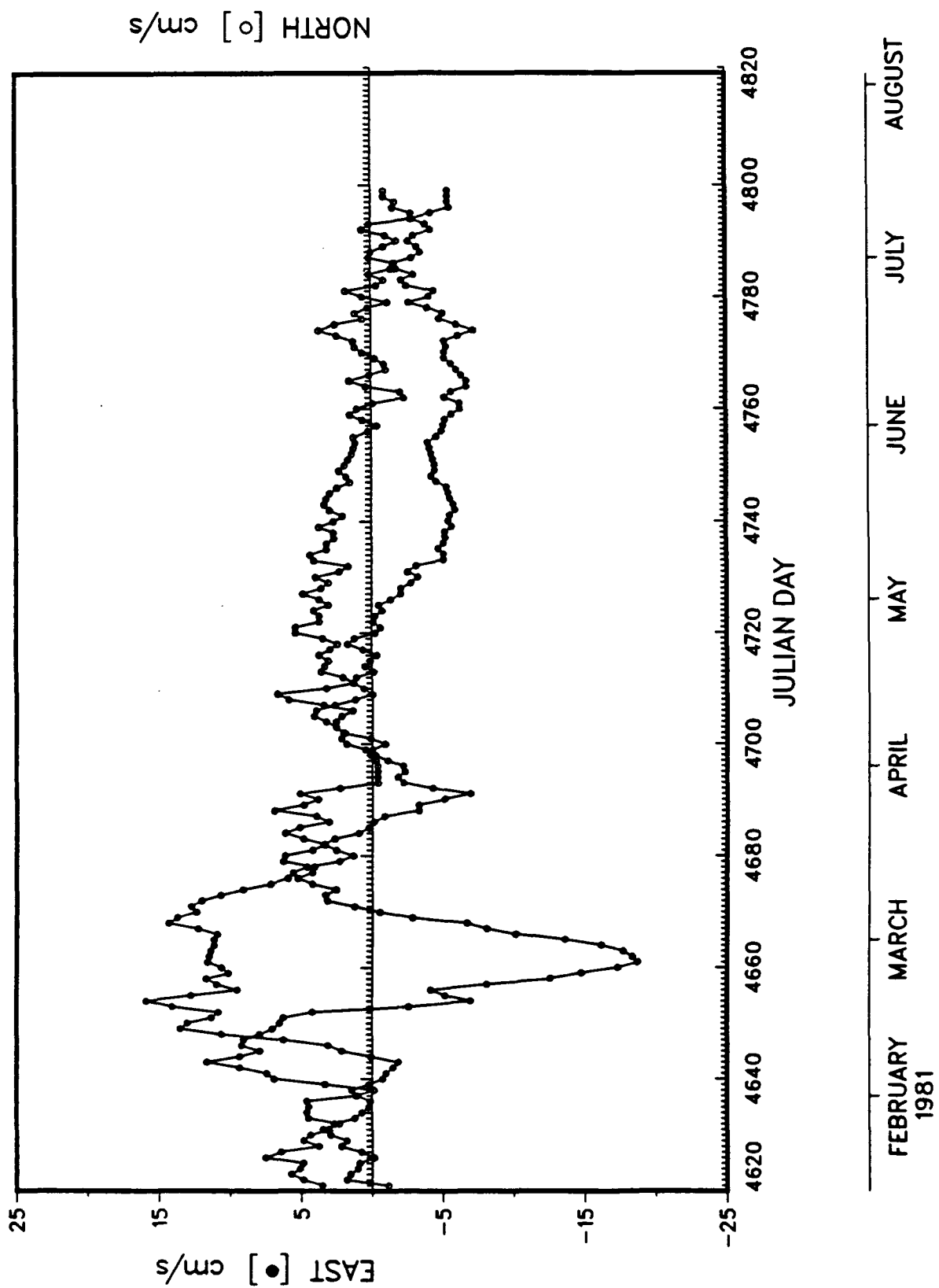
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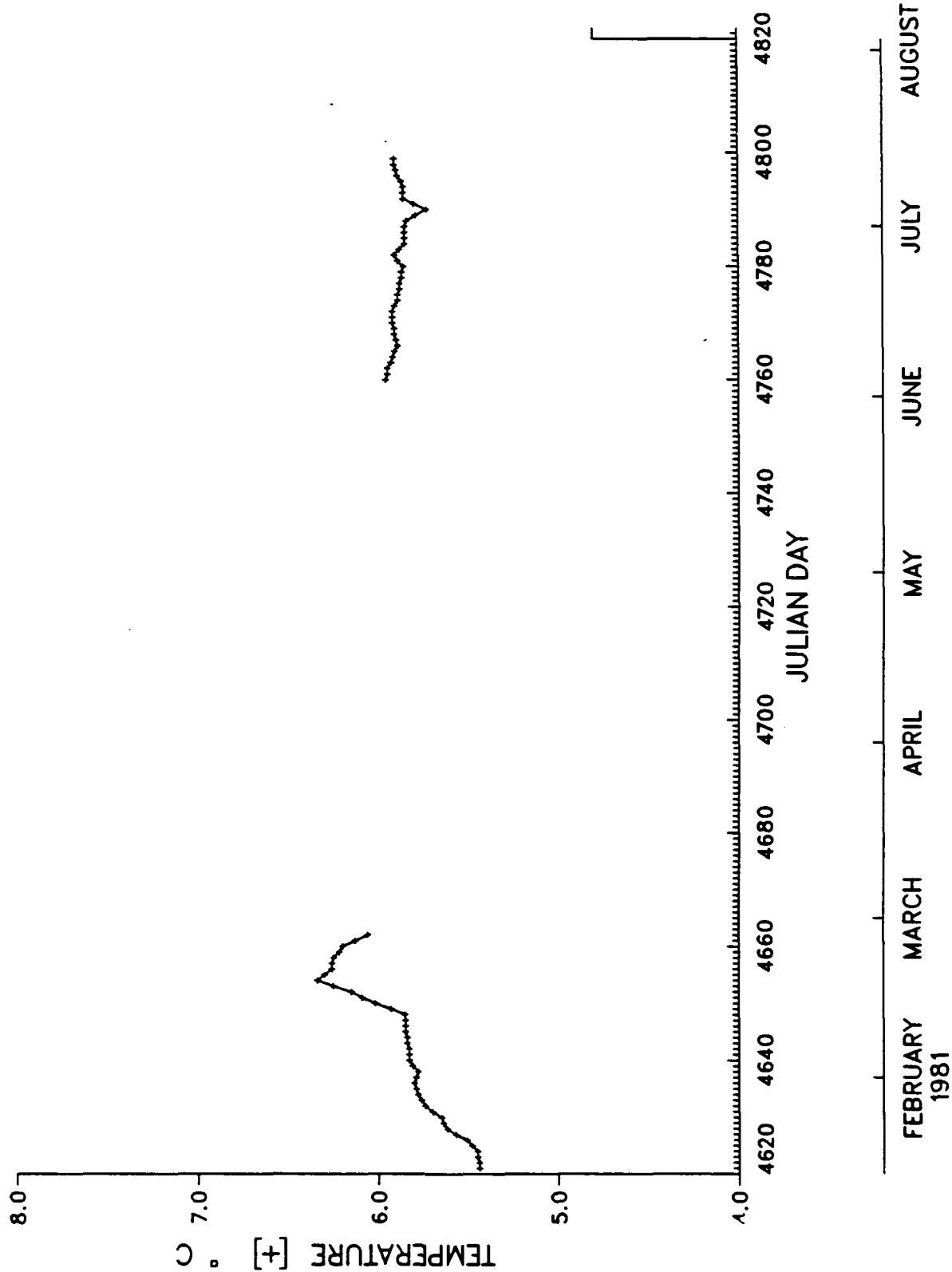
PRE LDE 12D



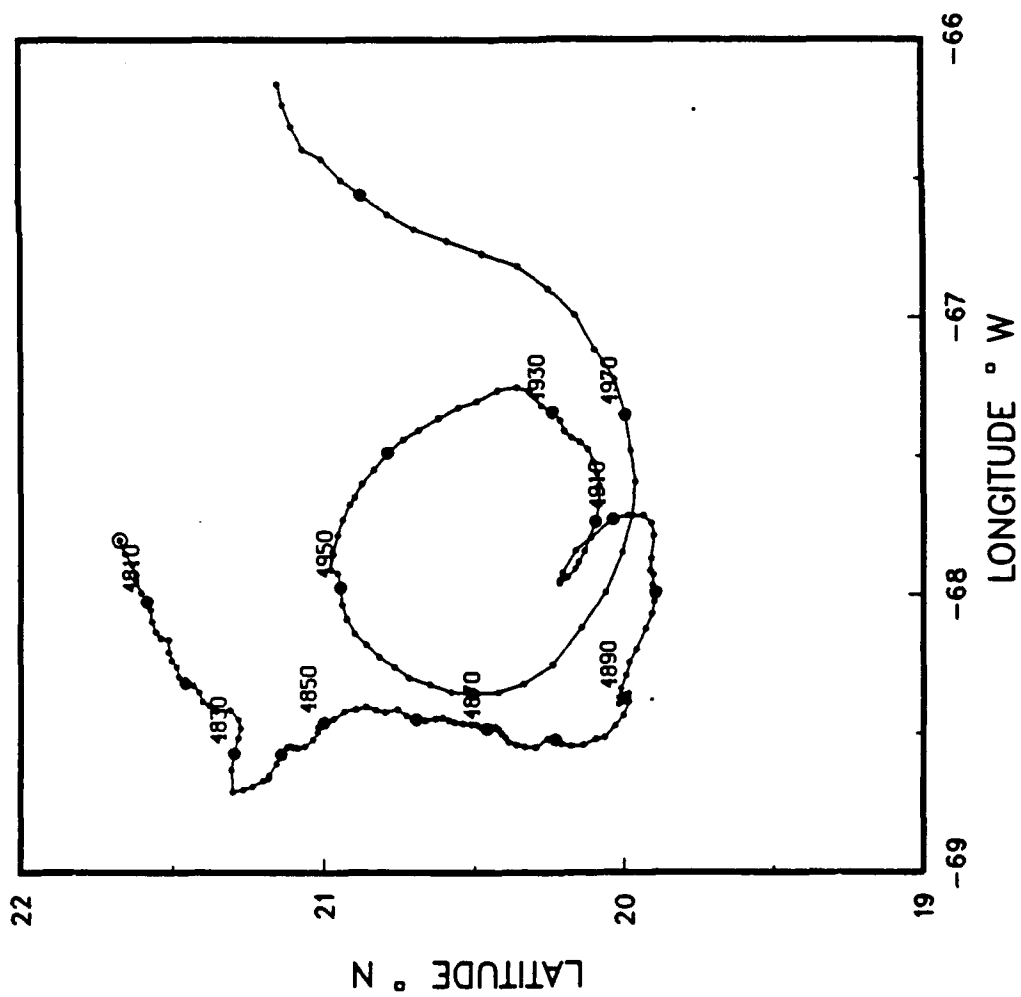
FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST
1981

PRE LDE 12D

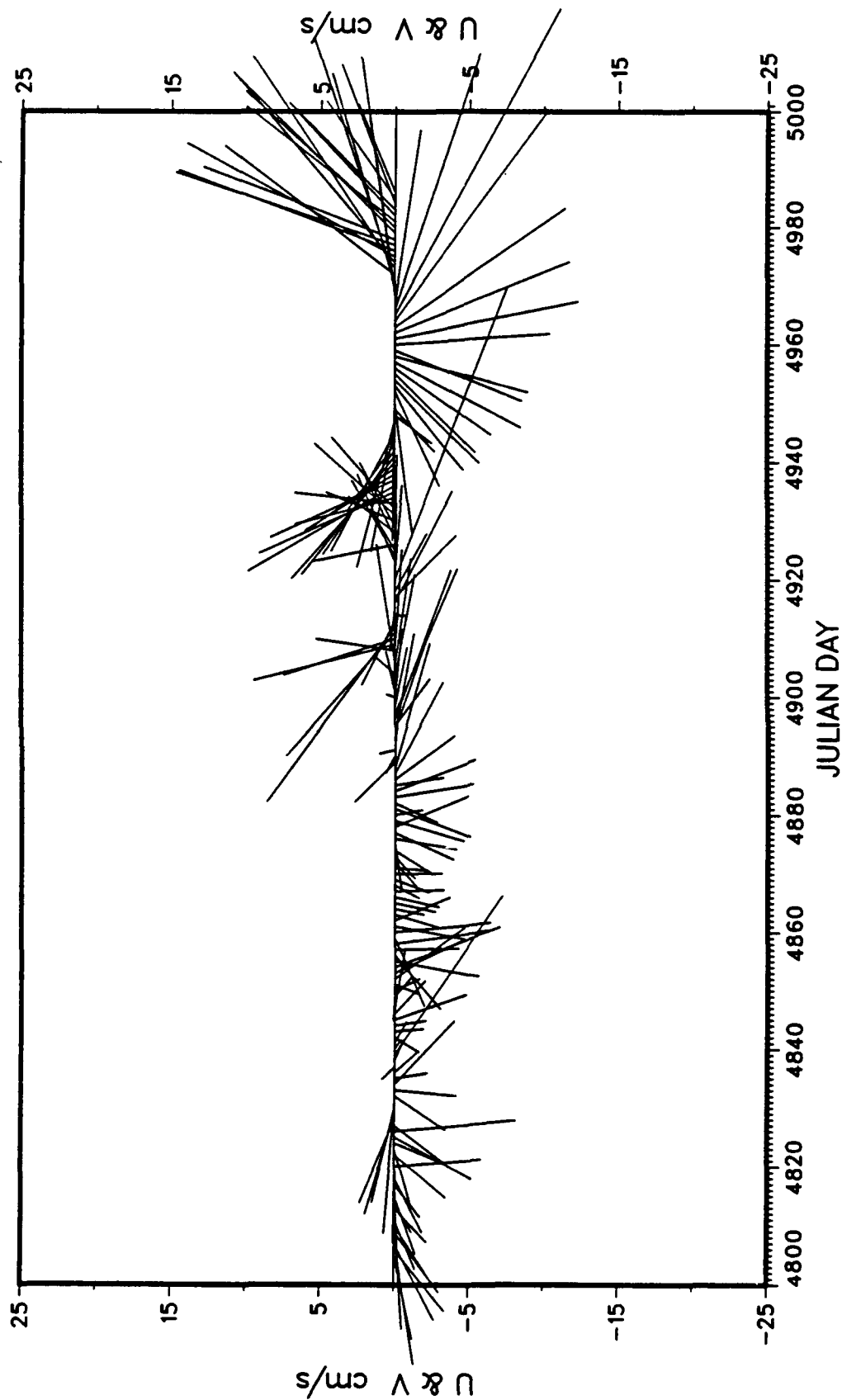




PRE LDE 12E

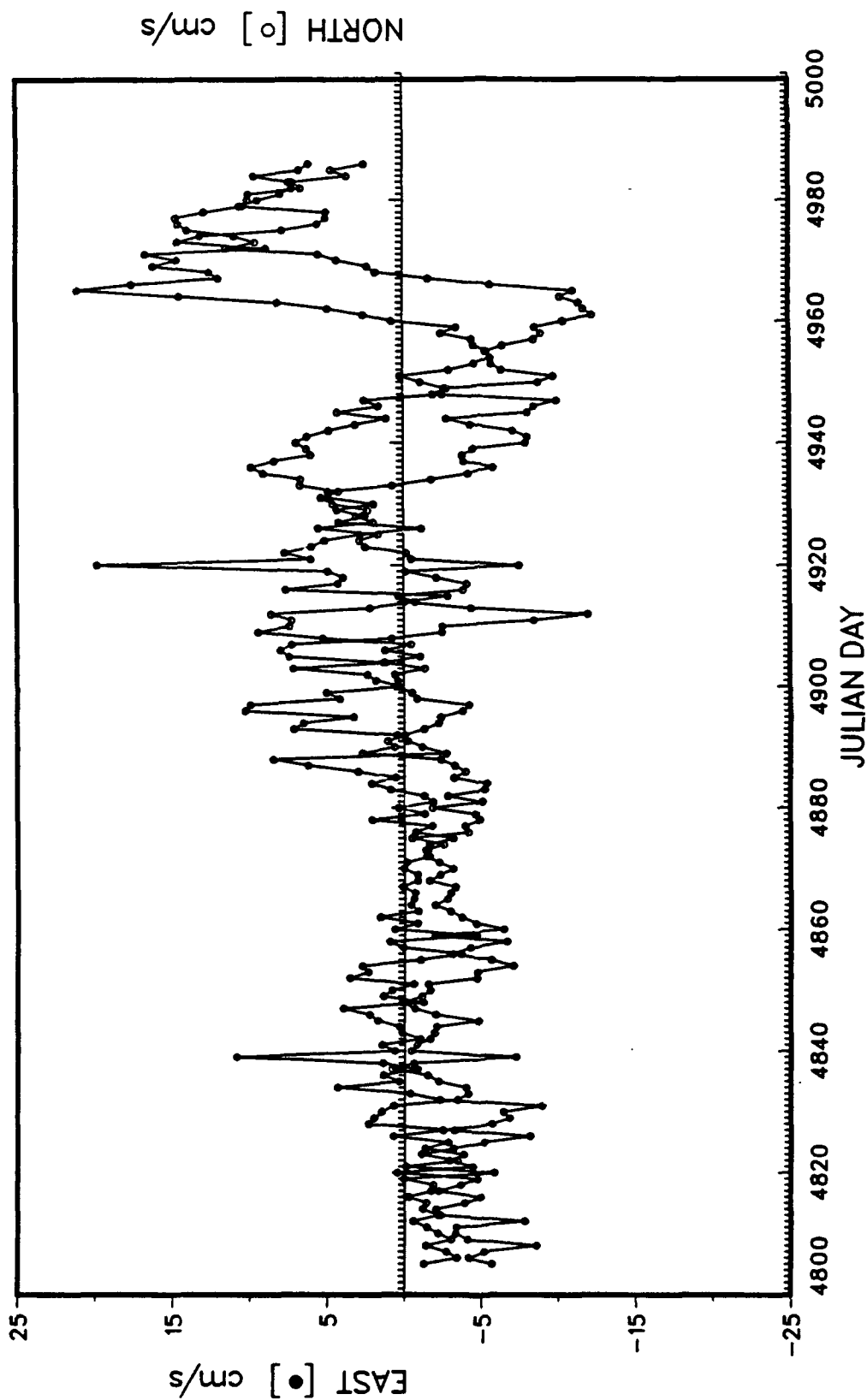


PRE LDE 12E

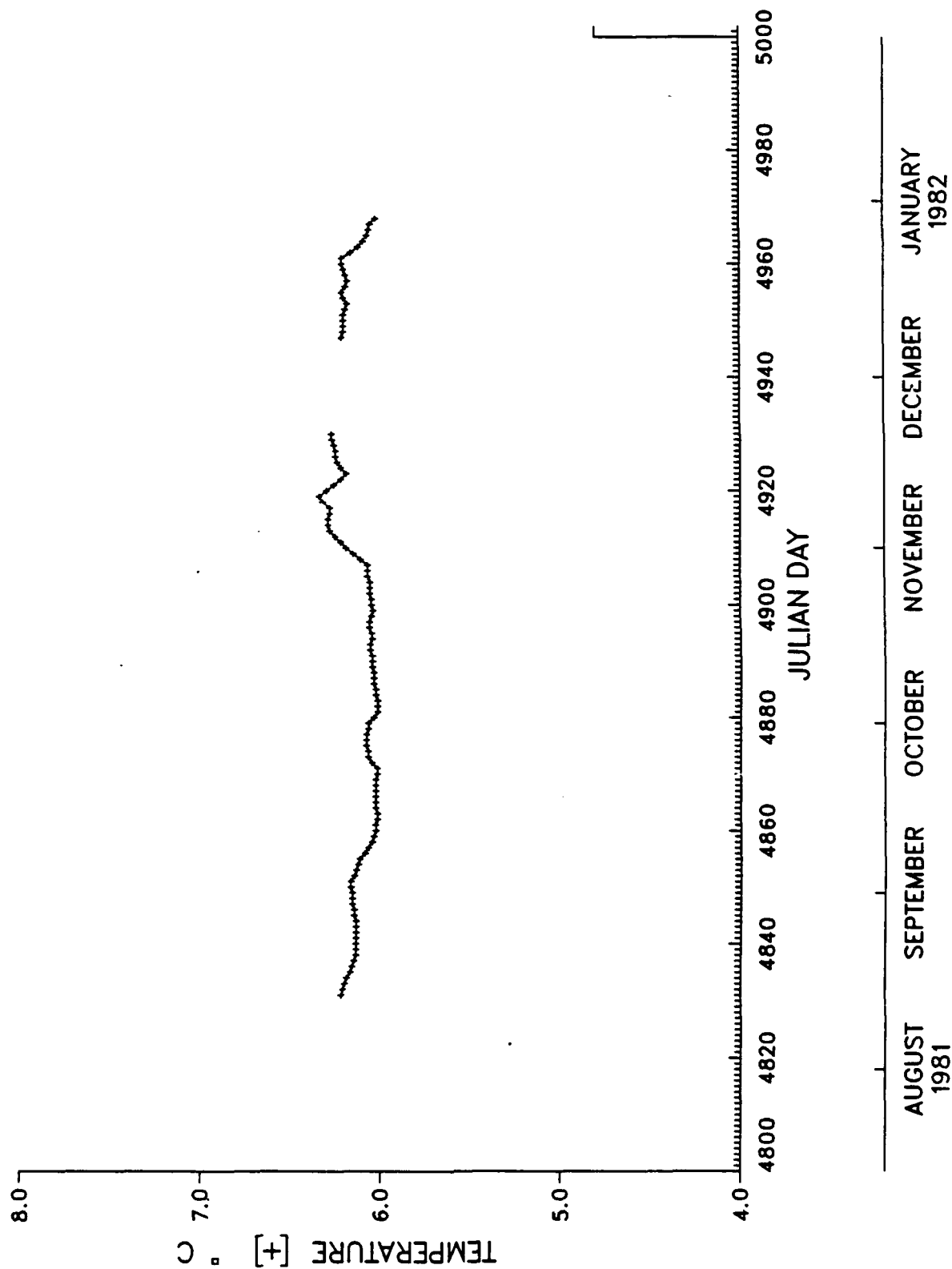


AUGUST 1981 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1982

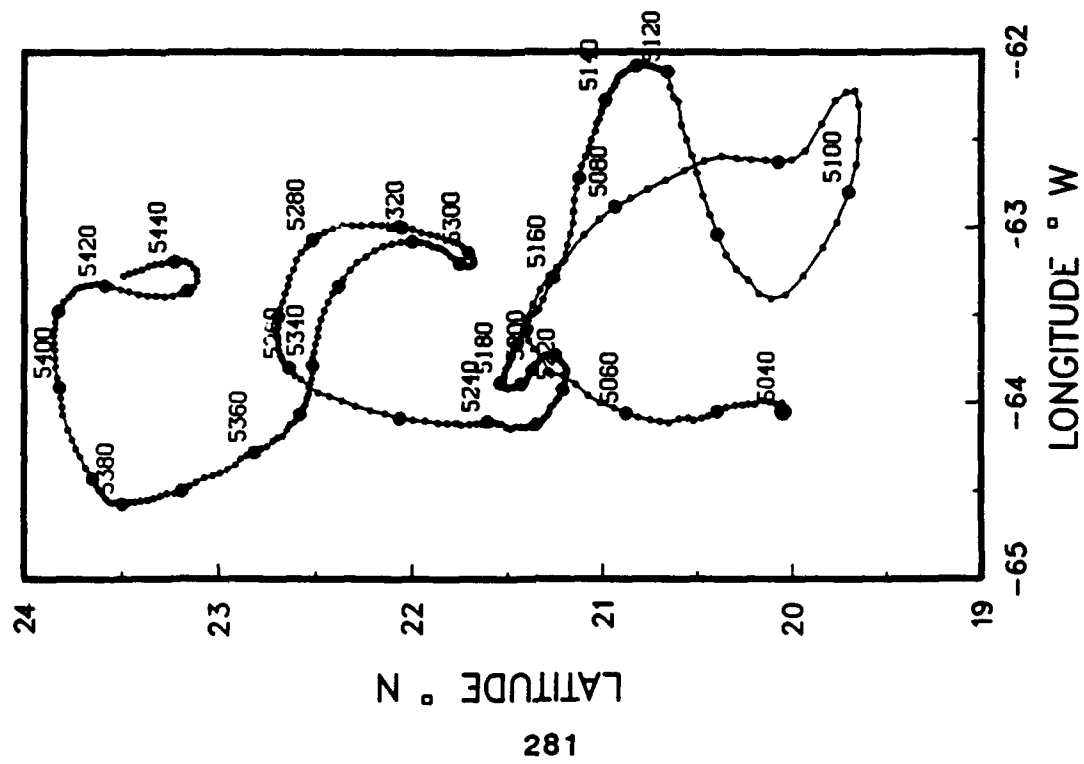
PRE LDE 12E



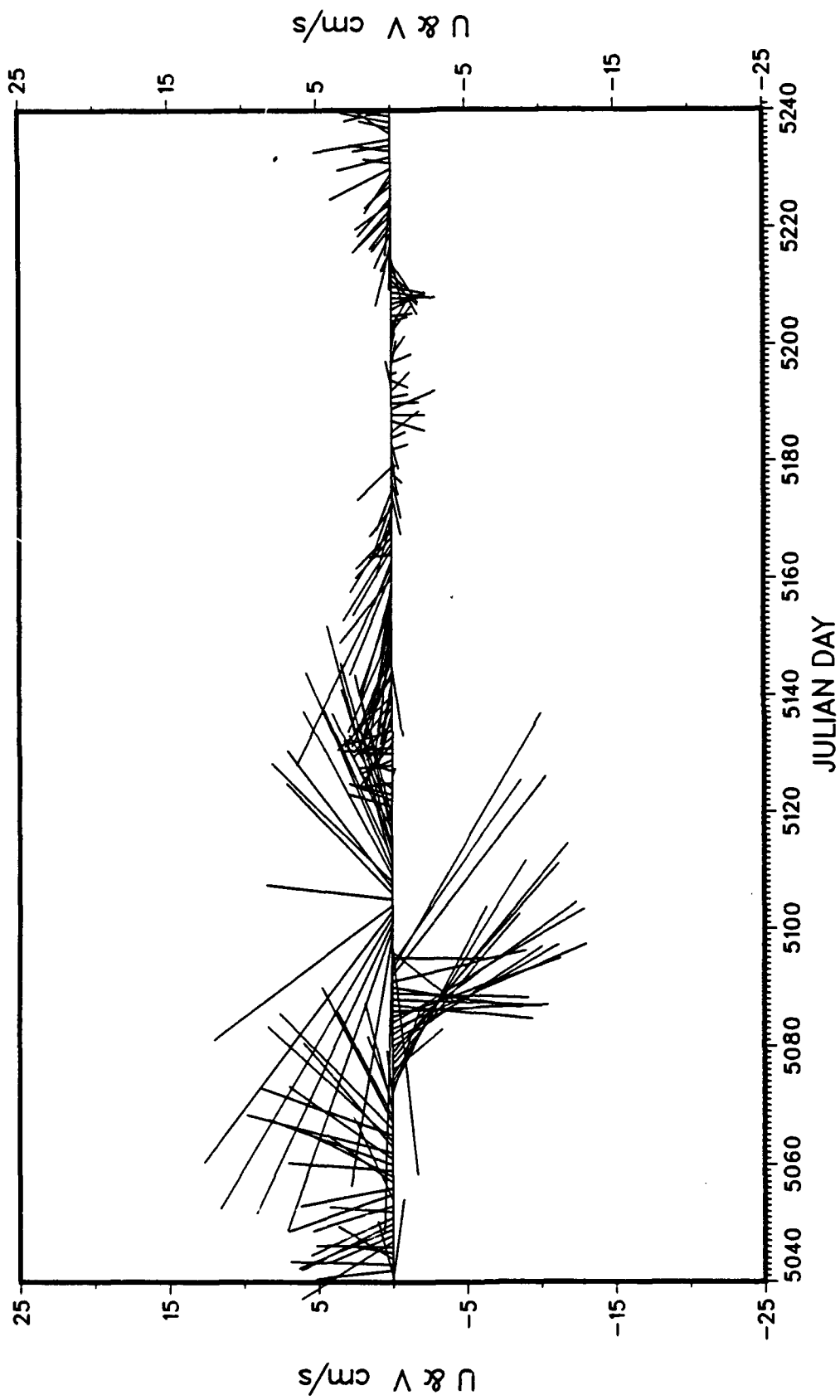
PRE LDE 12E



PRE LDE 12F

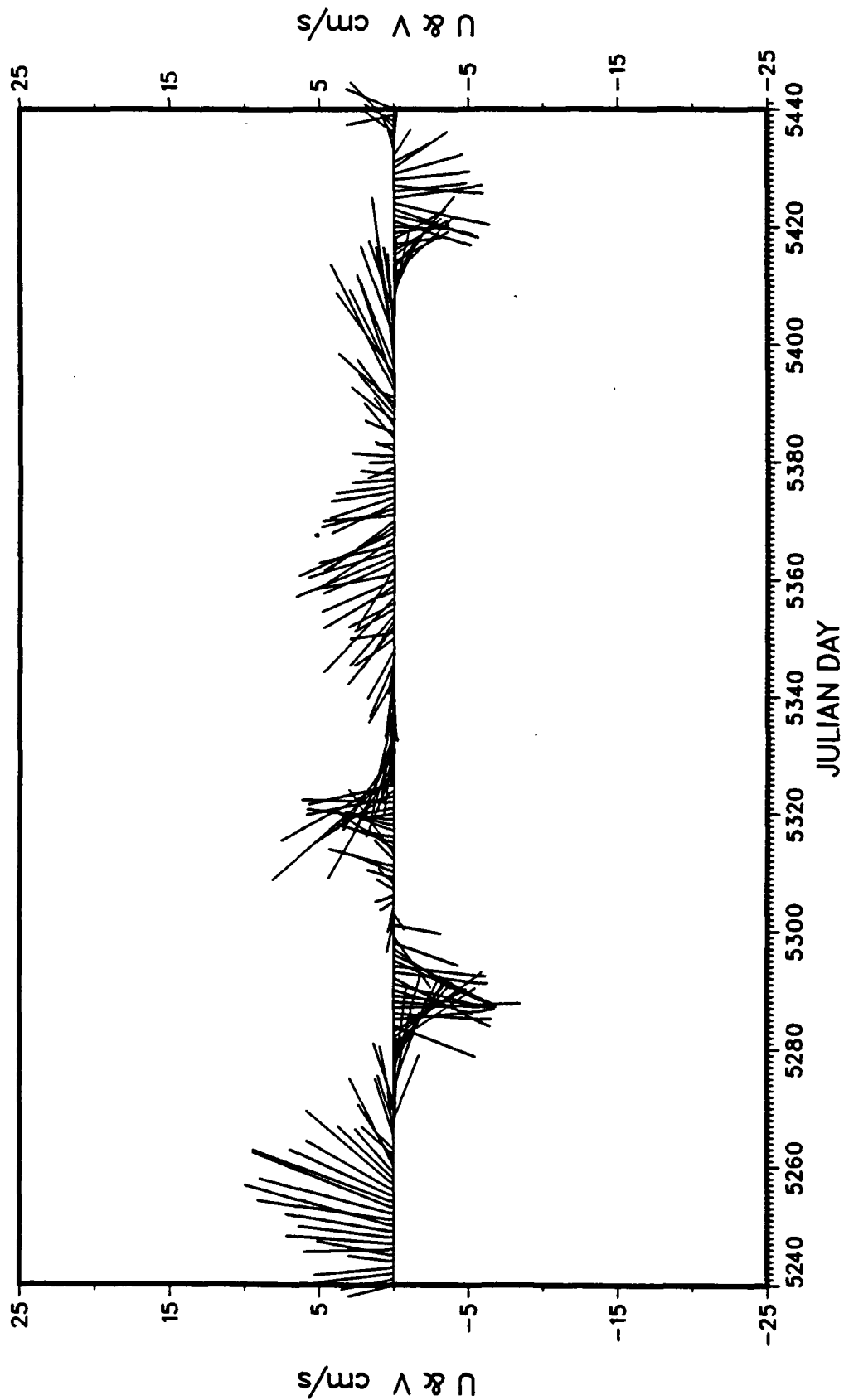


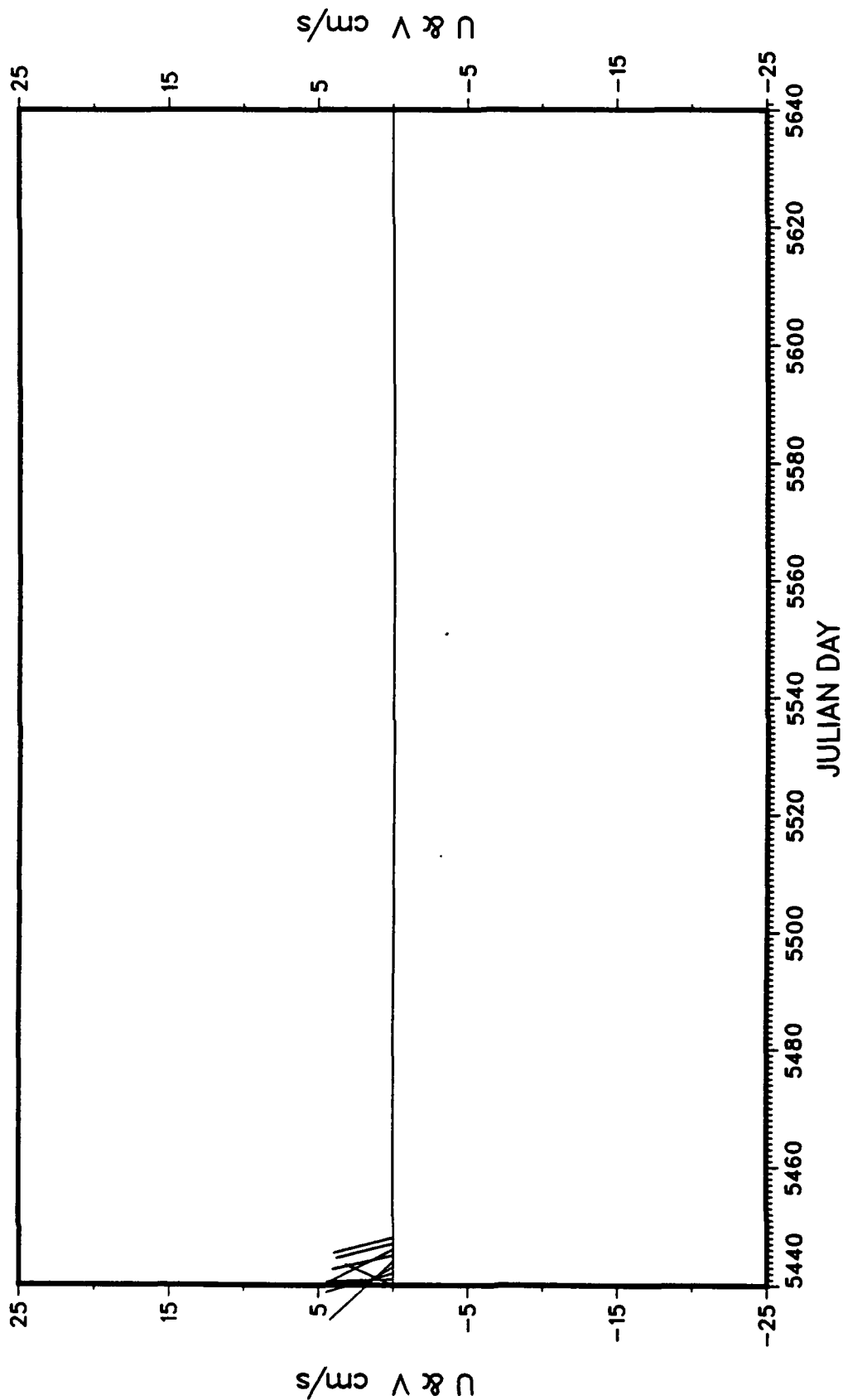
PRE LDE 12F



APRIL 1982 MAY JUNE JULY AUGUST SEPTEMBER

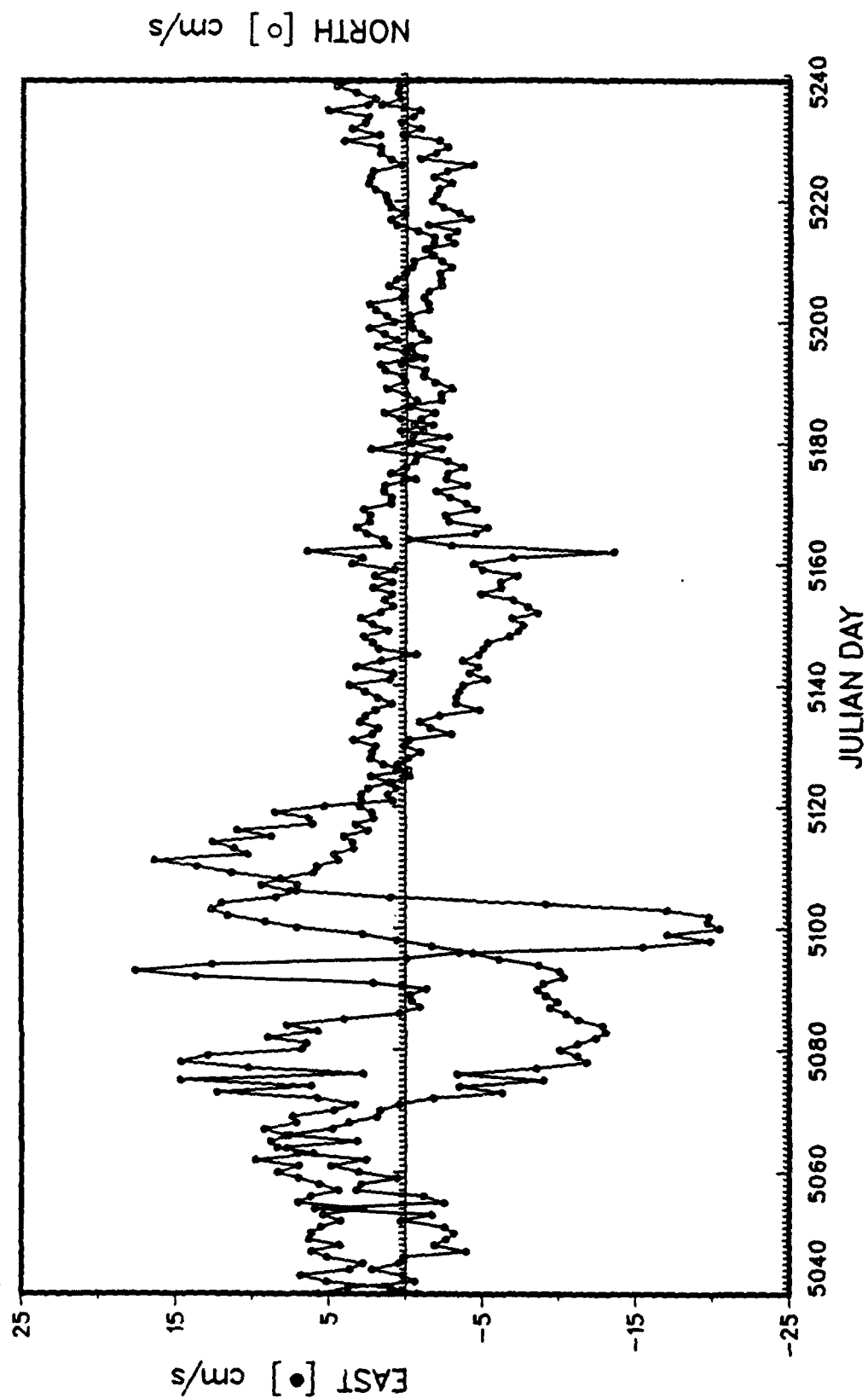
PRE LDE 12F

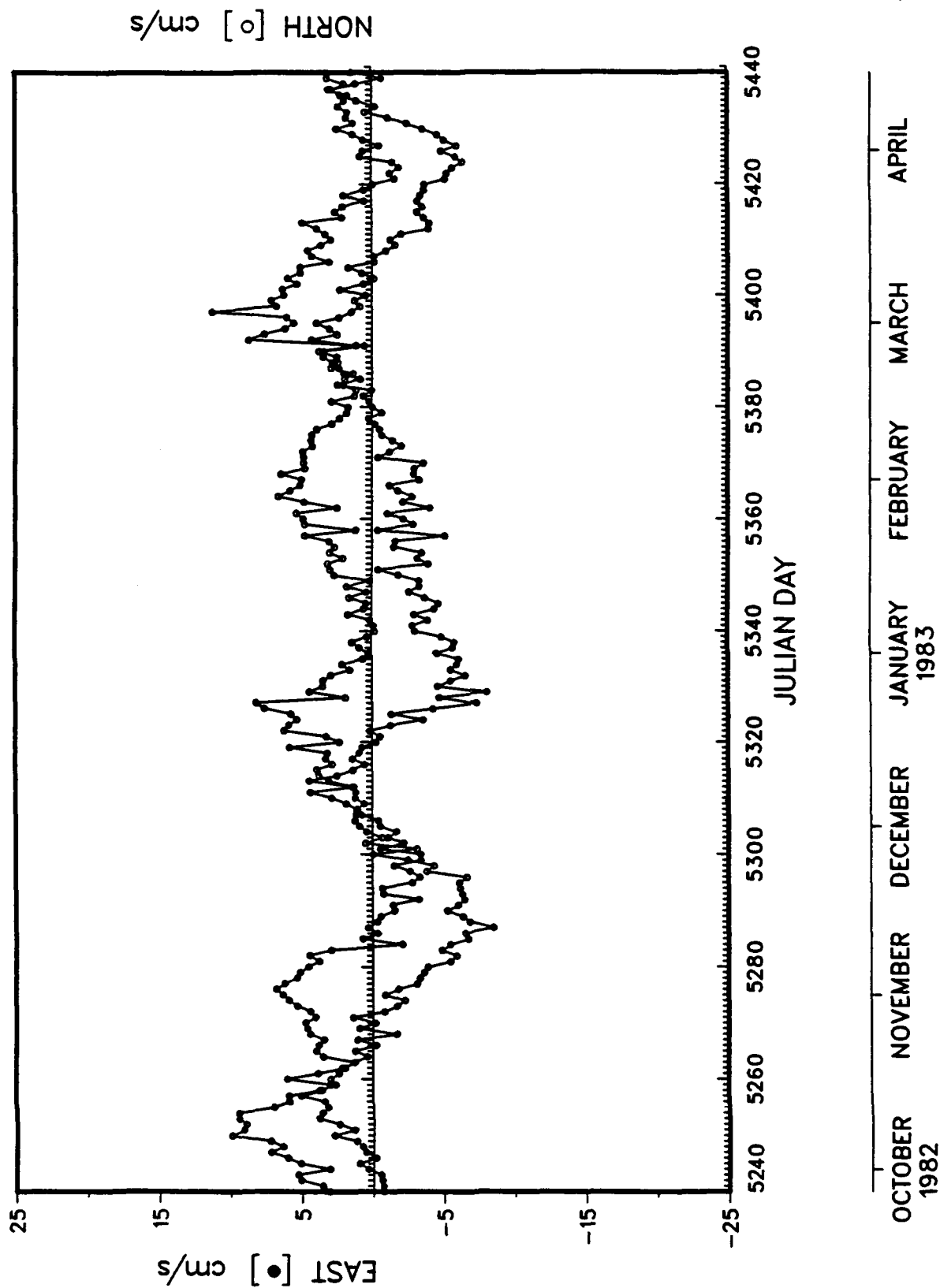




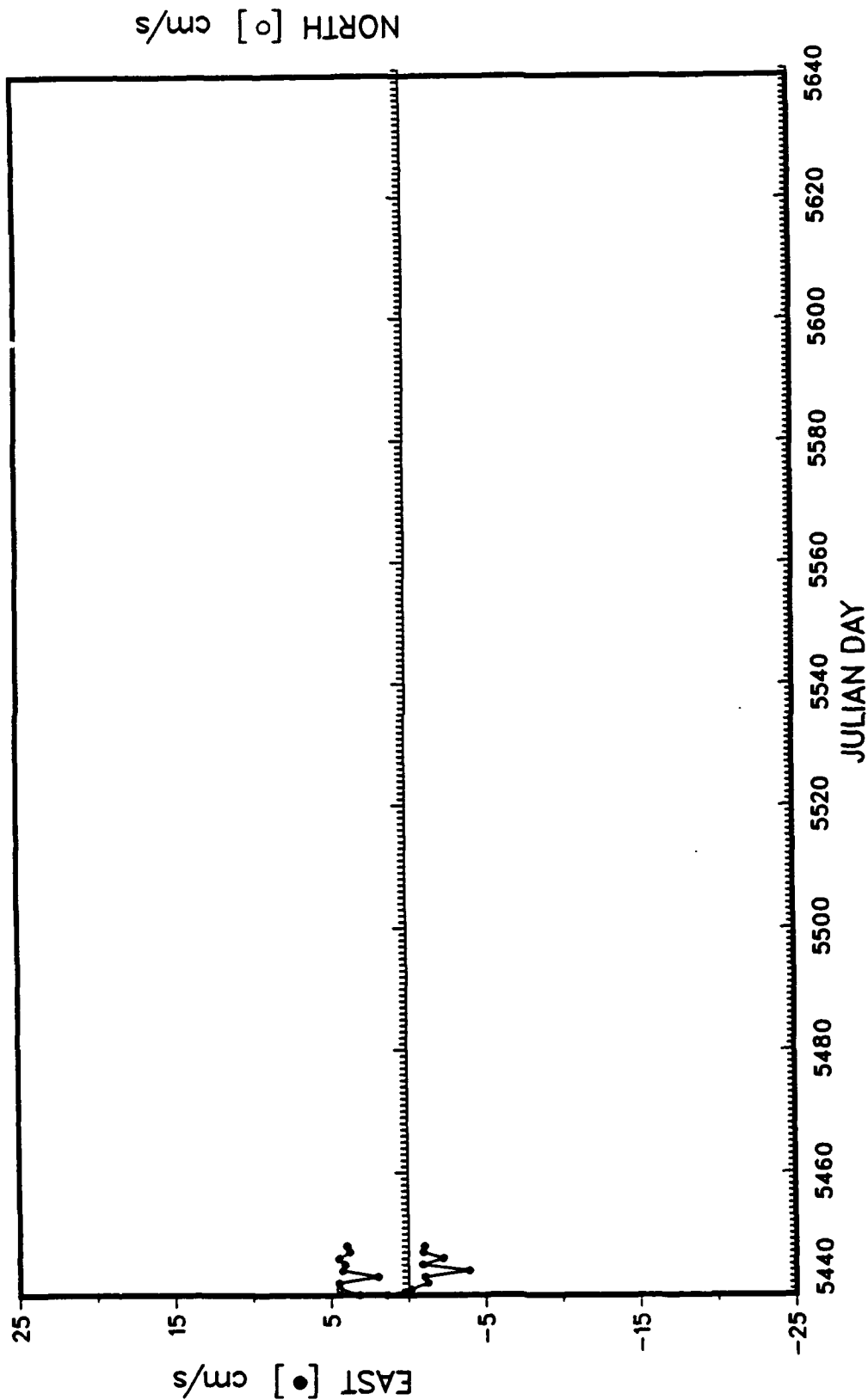
MAY 1983 JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER

PRE LDE 12F

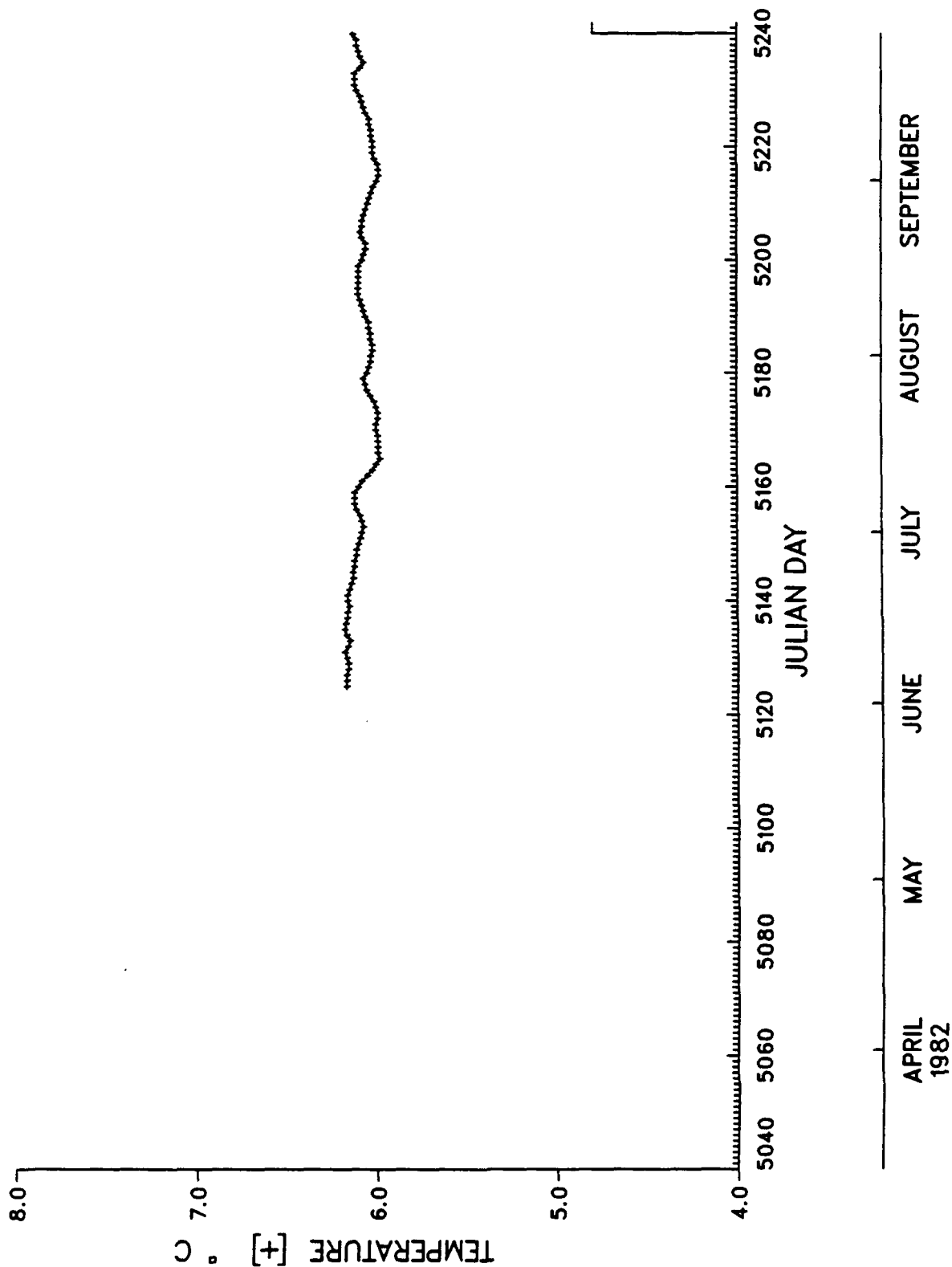




PRE LDE 12F



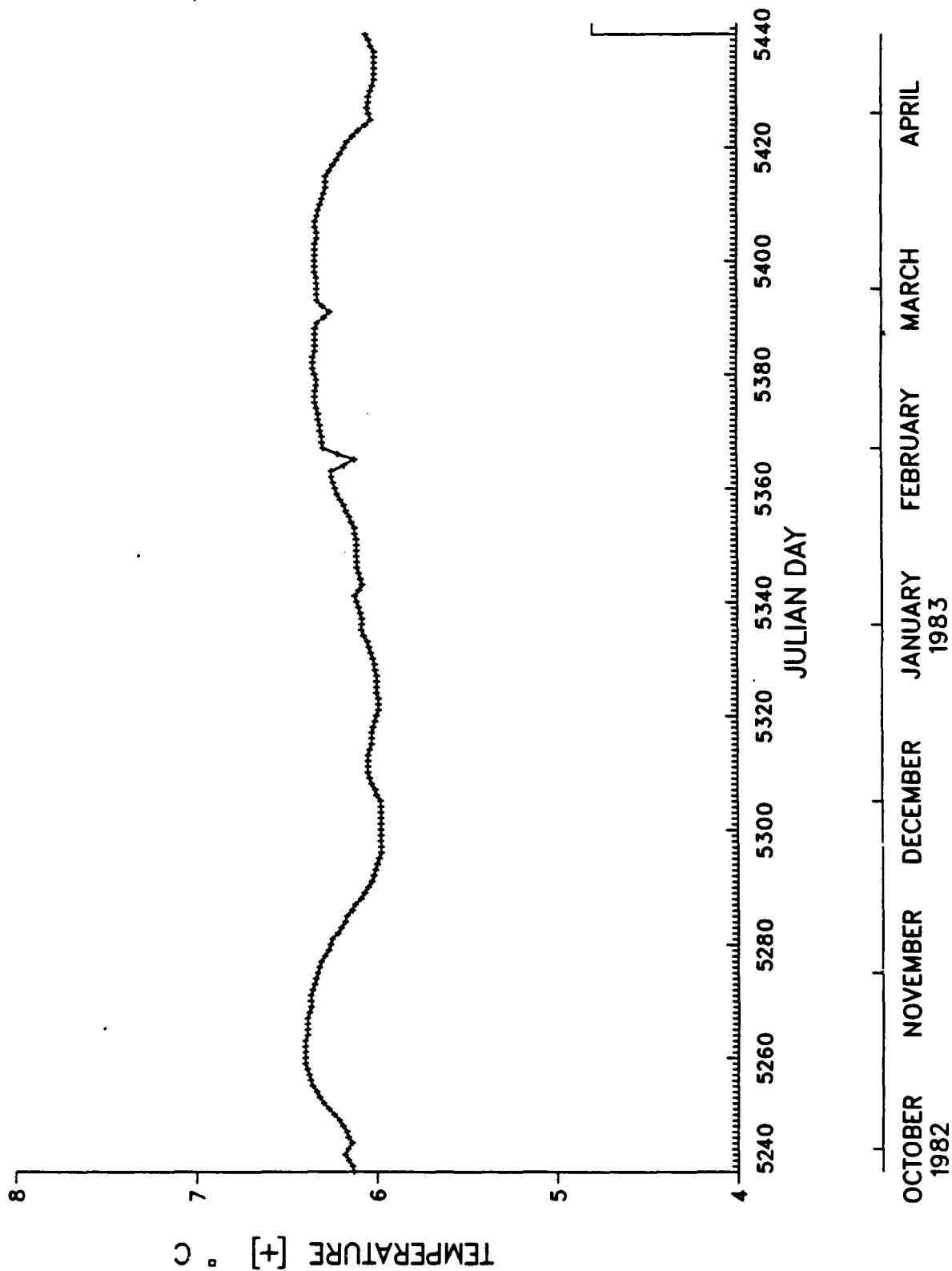
PRE LDE 12F



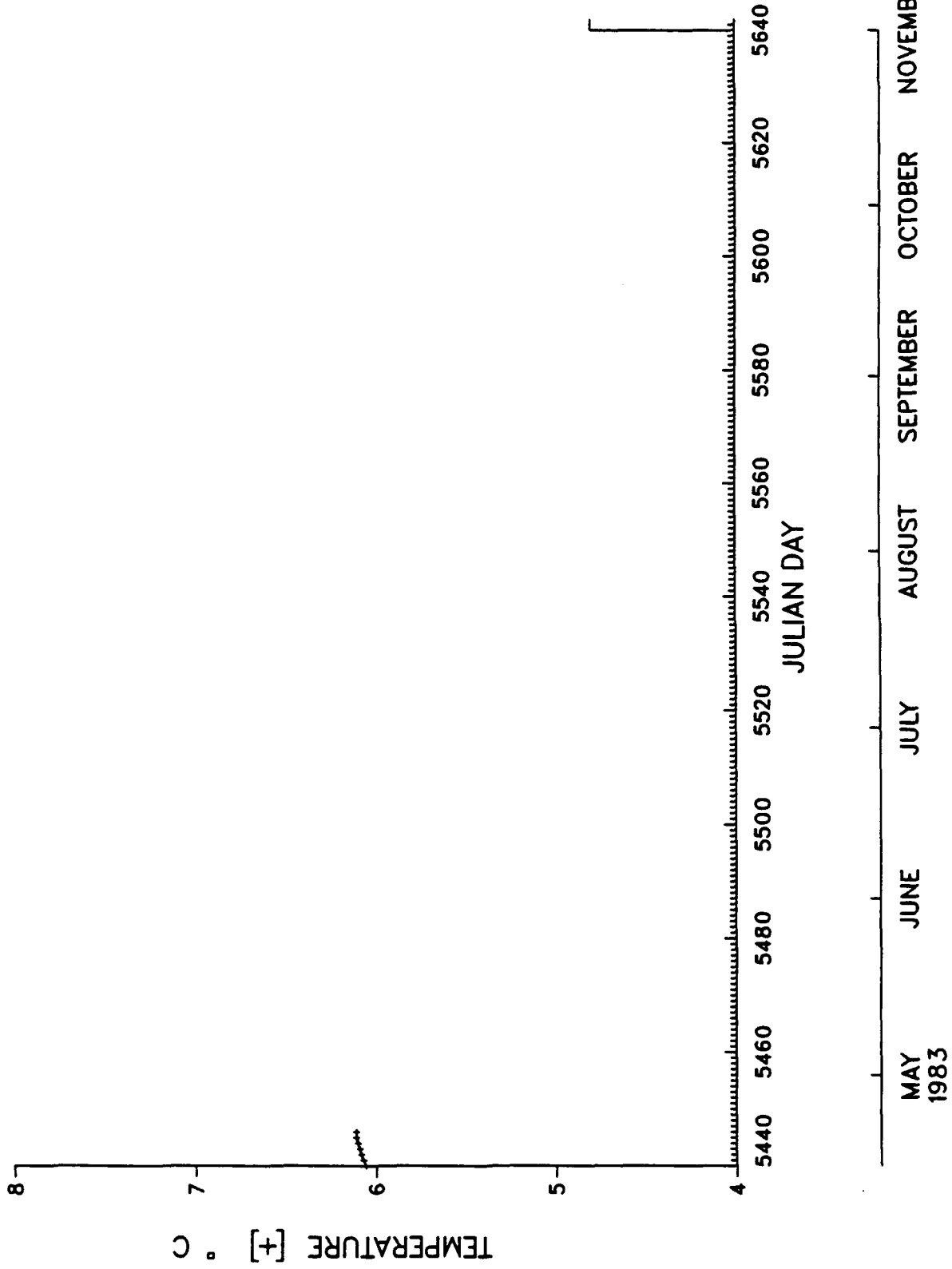
PLOT 1 OF 3
.DAT

11-OCT-87 11:35:26

PRE LDE 12F



PRE LDE 12F

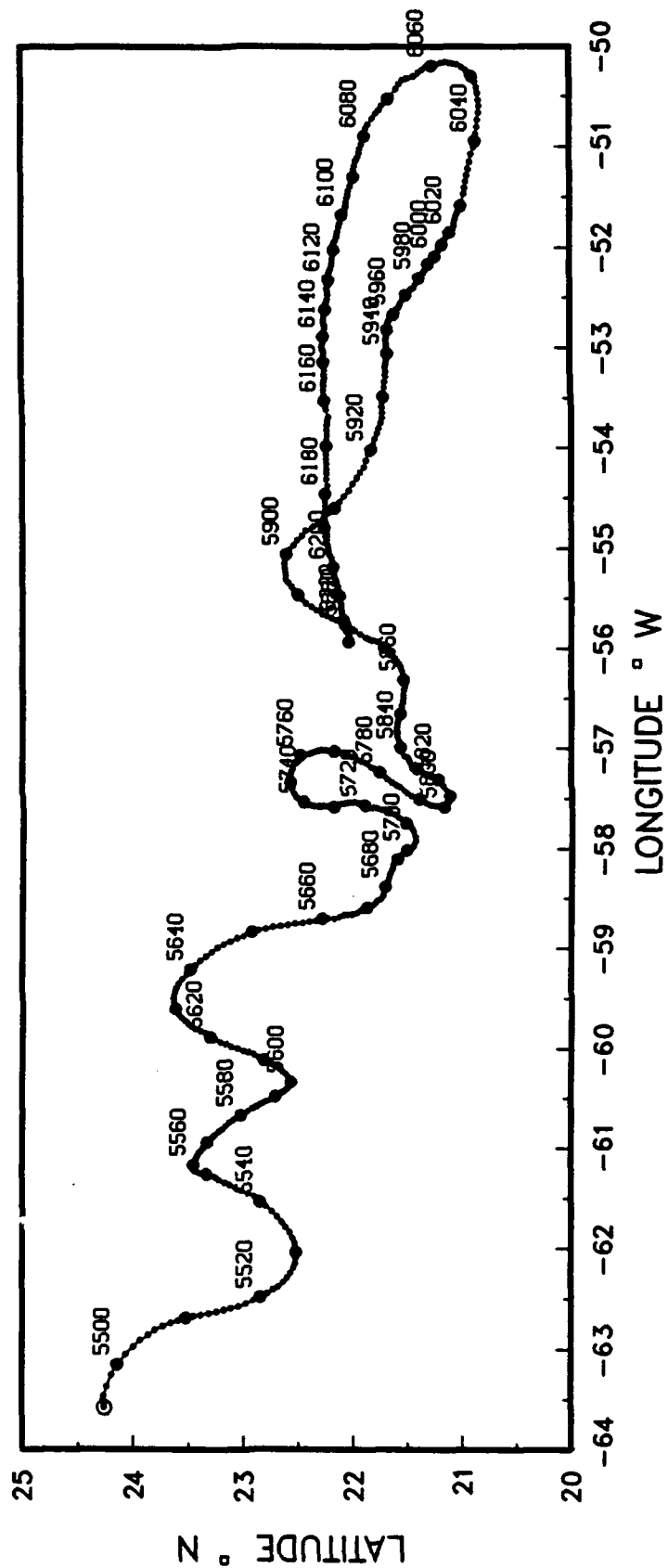


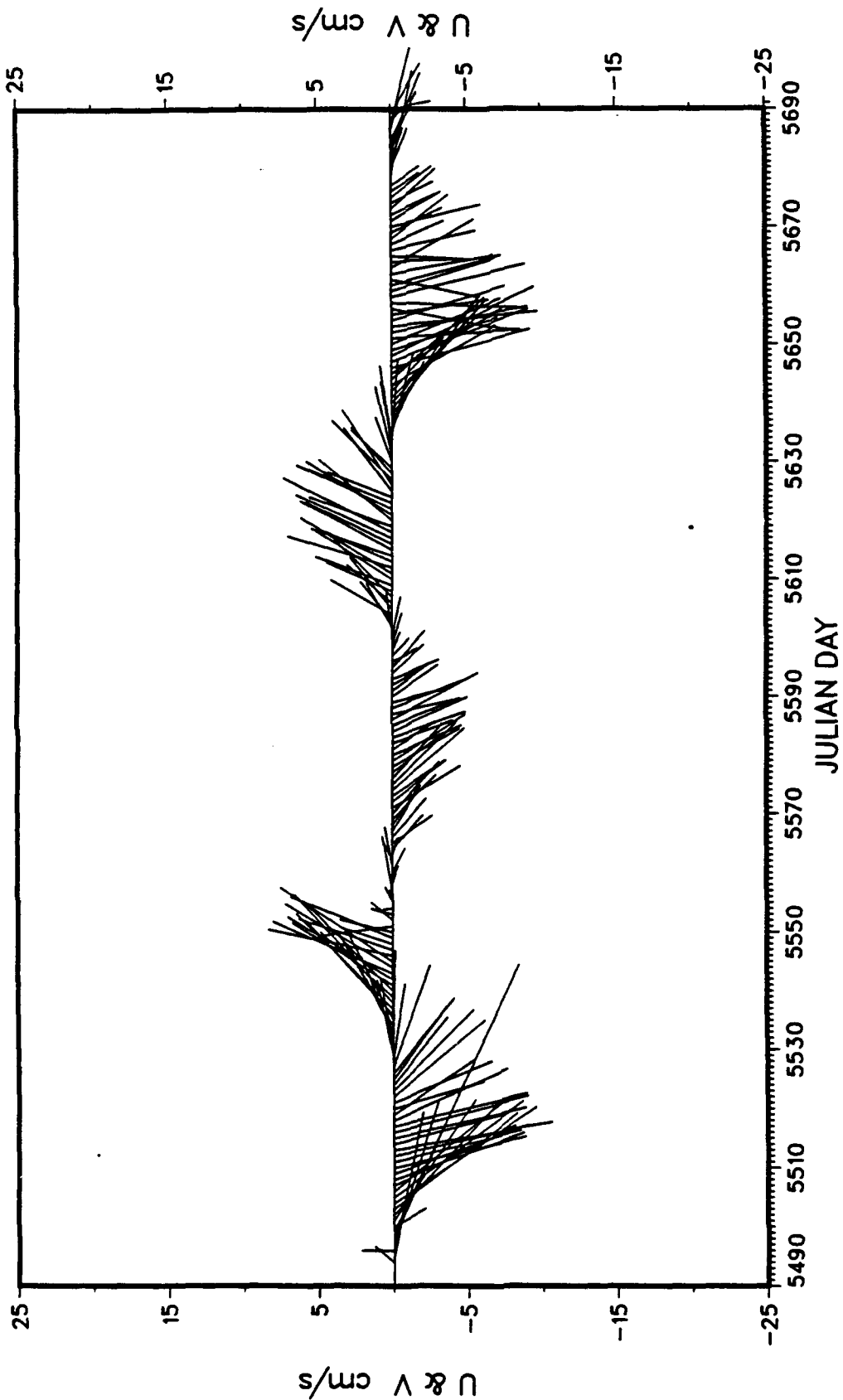
290

PLOT 3 OF 3
.DAY

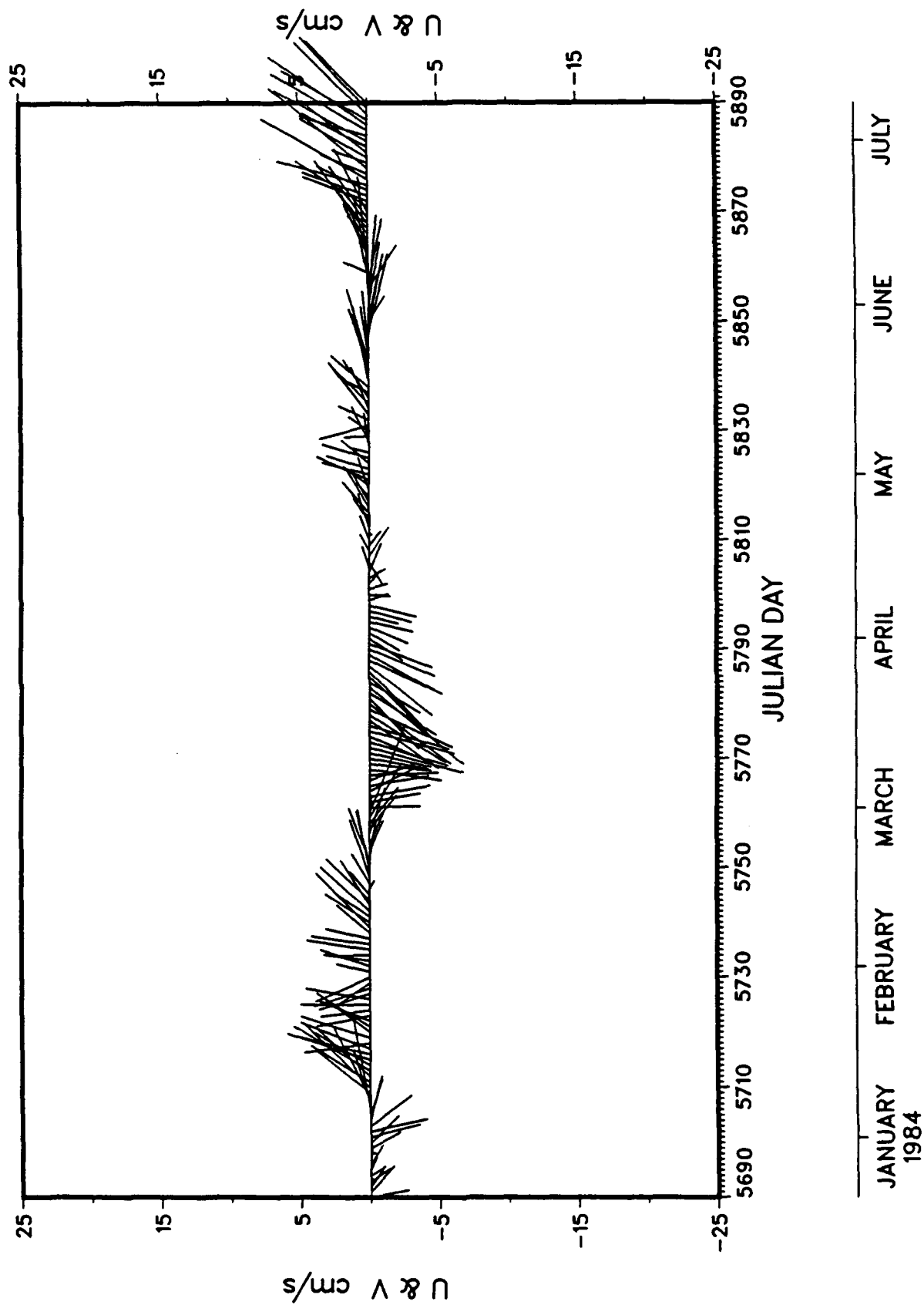
11-OCT-87 11:35:28

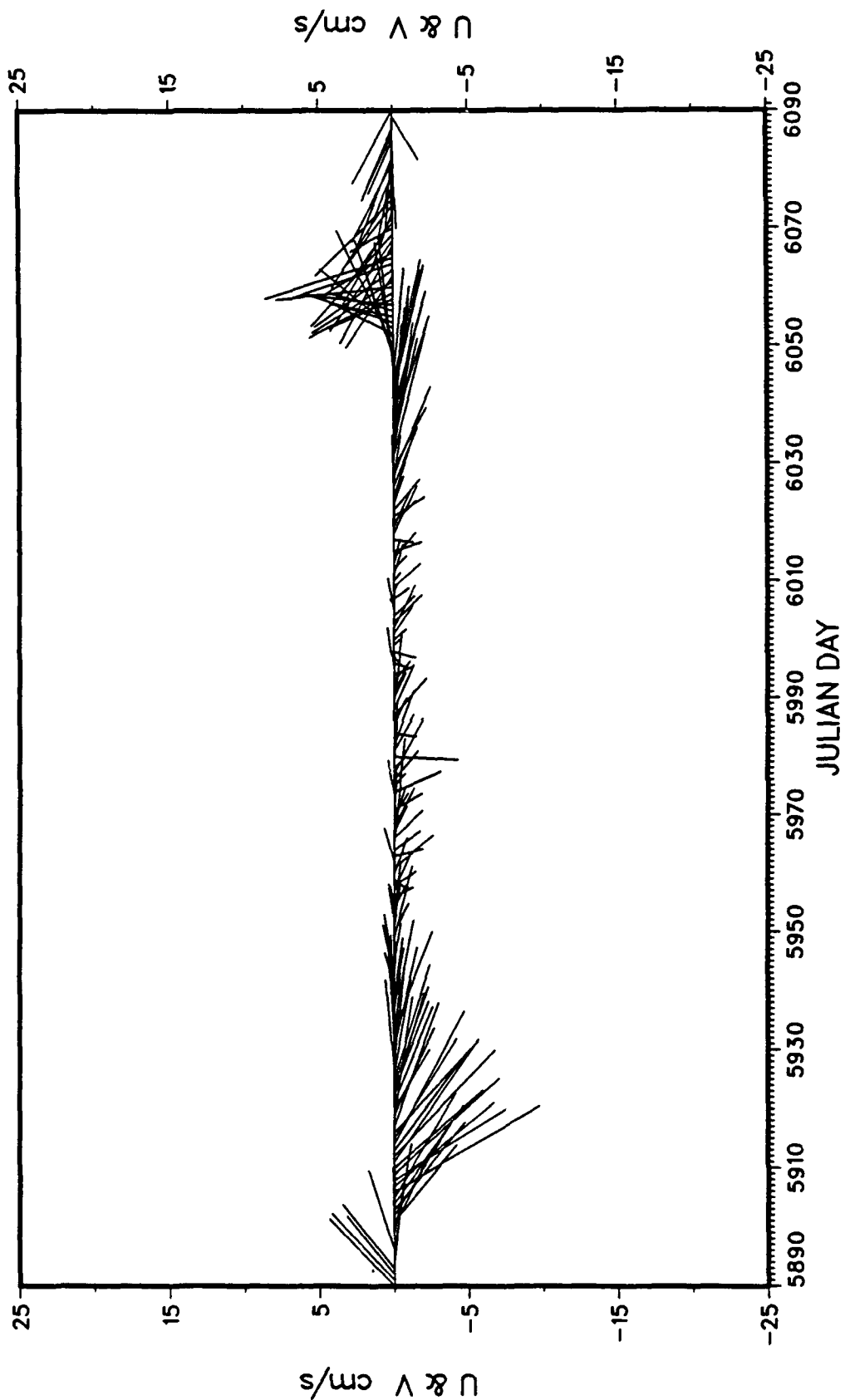
PRE LDE 12G





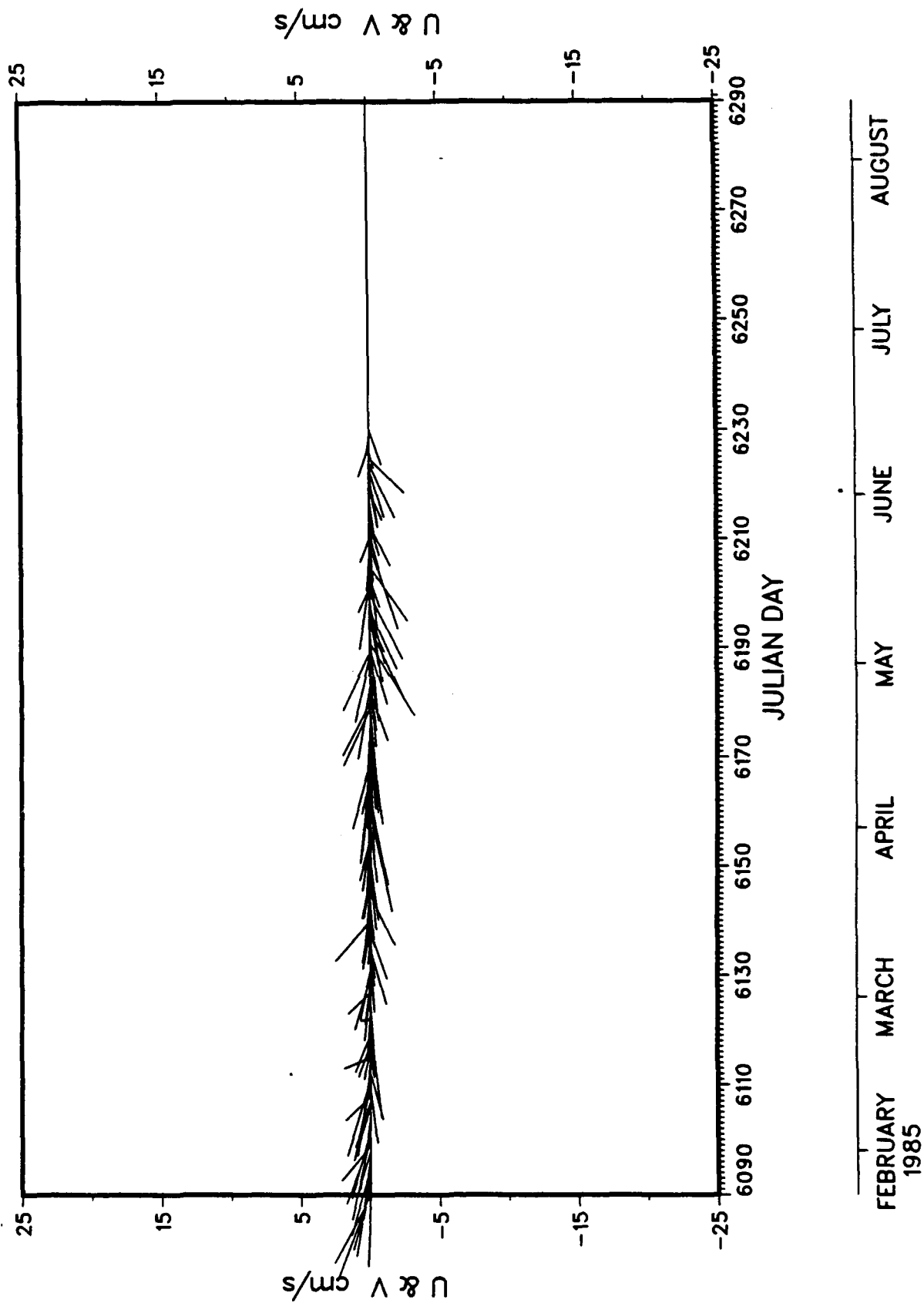
JULY 1983
 AUGUST
 SEPTEMBER
 OCTOBER
 NOVEMBER
 DECEMBER

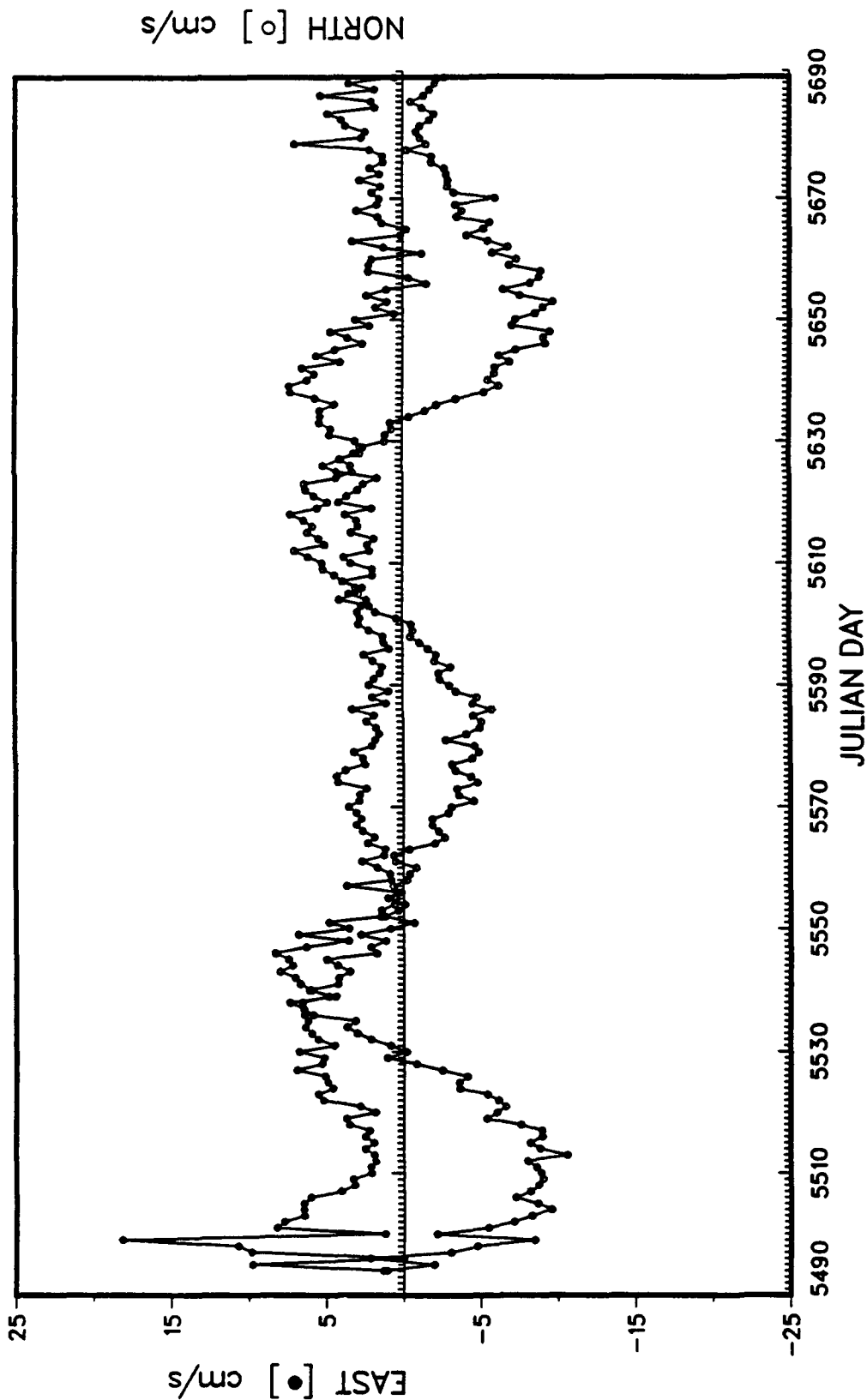




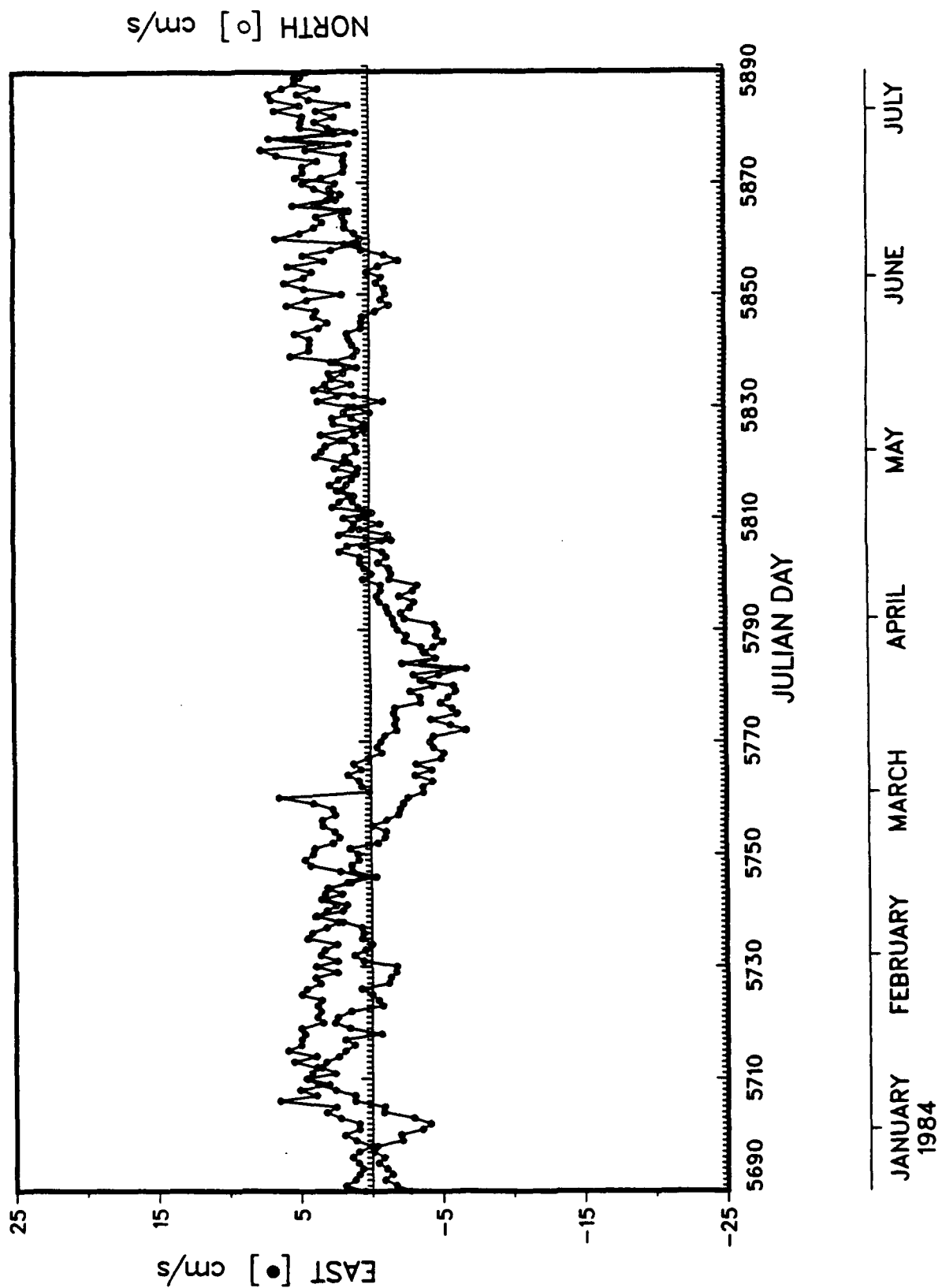
AUGUST 1984 SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY 1985

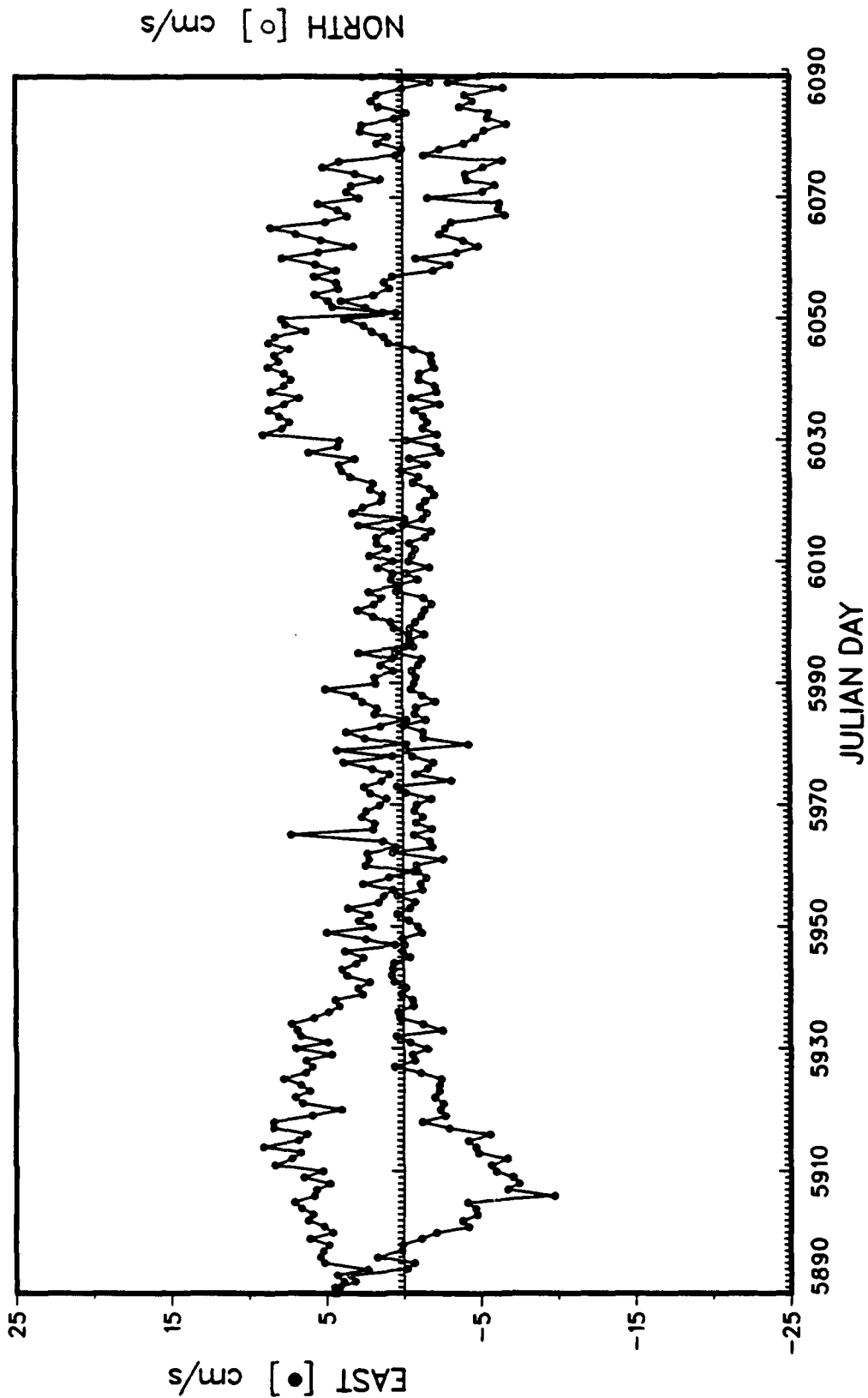
PRE LDE 12G



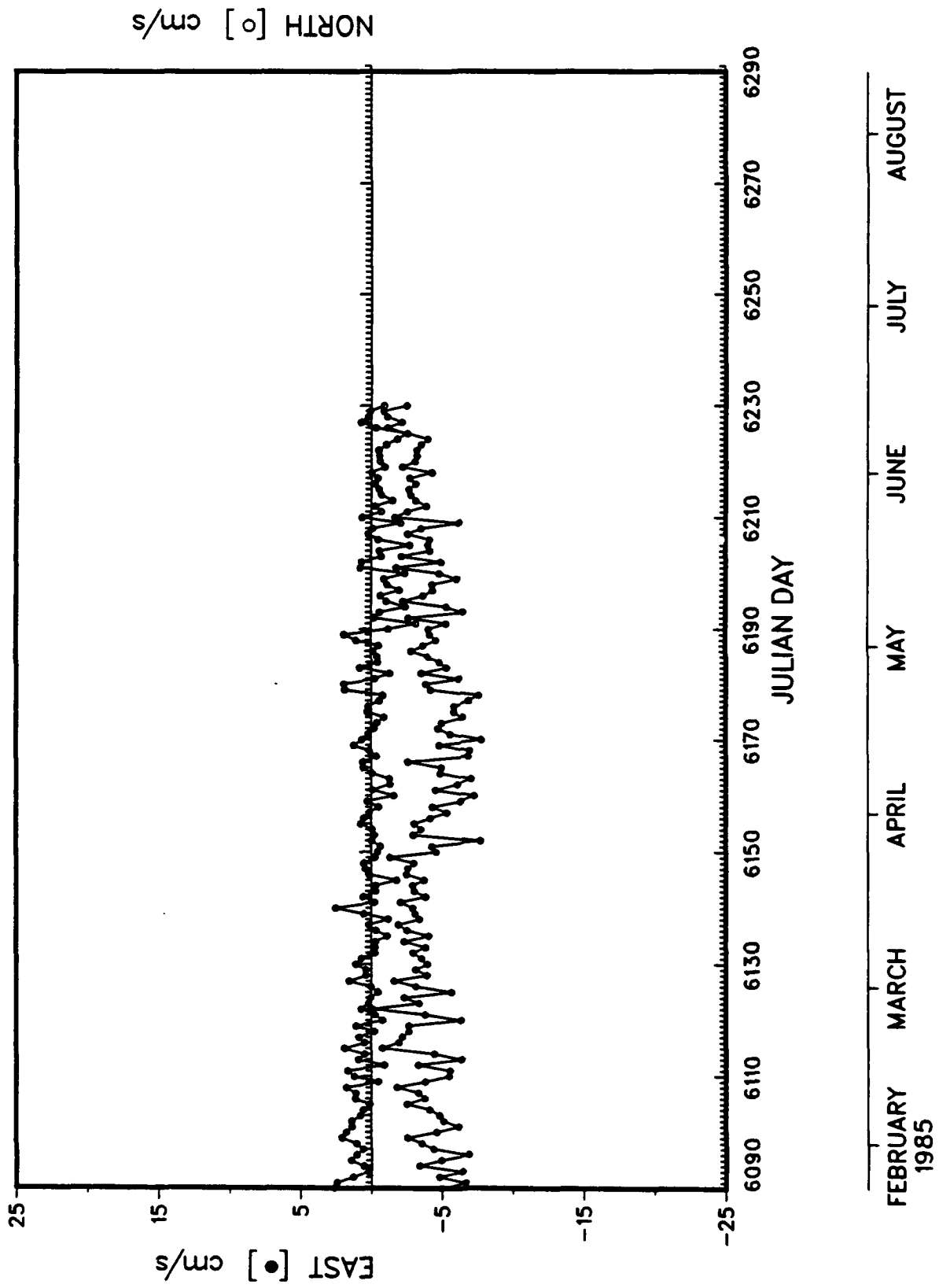


PRE LDE 12G

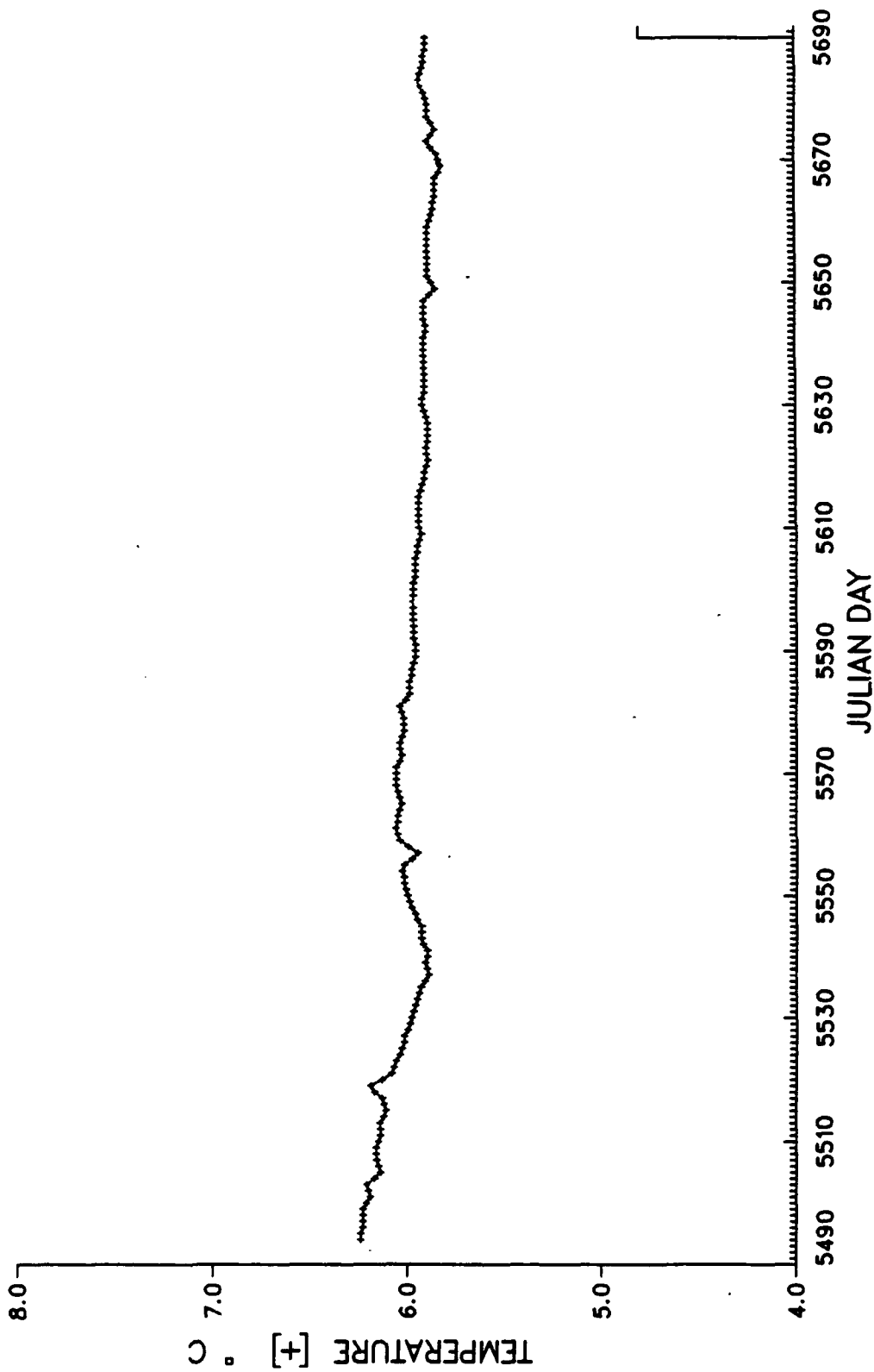




PRE LDE 12G



PRE LDE 12G



JULY 1983

AUGUST

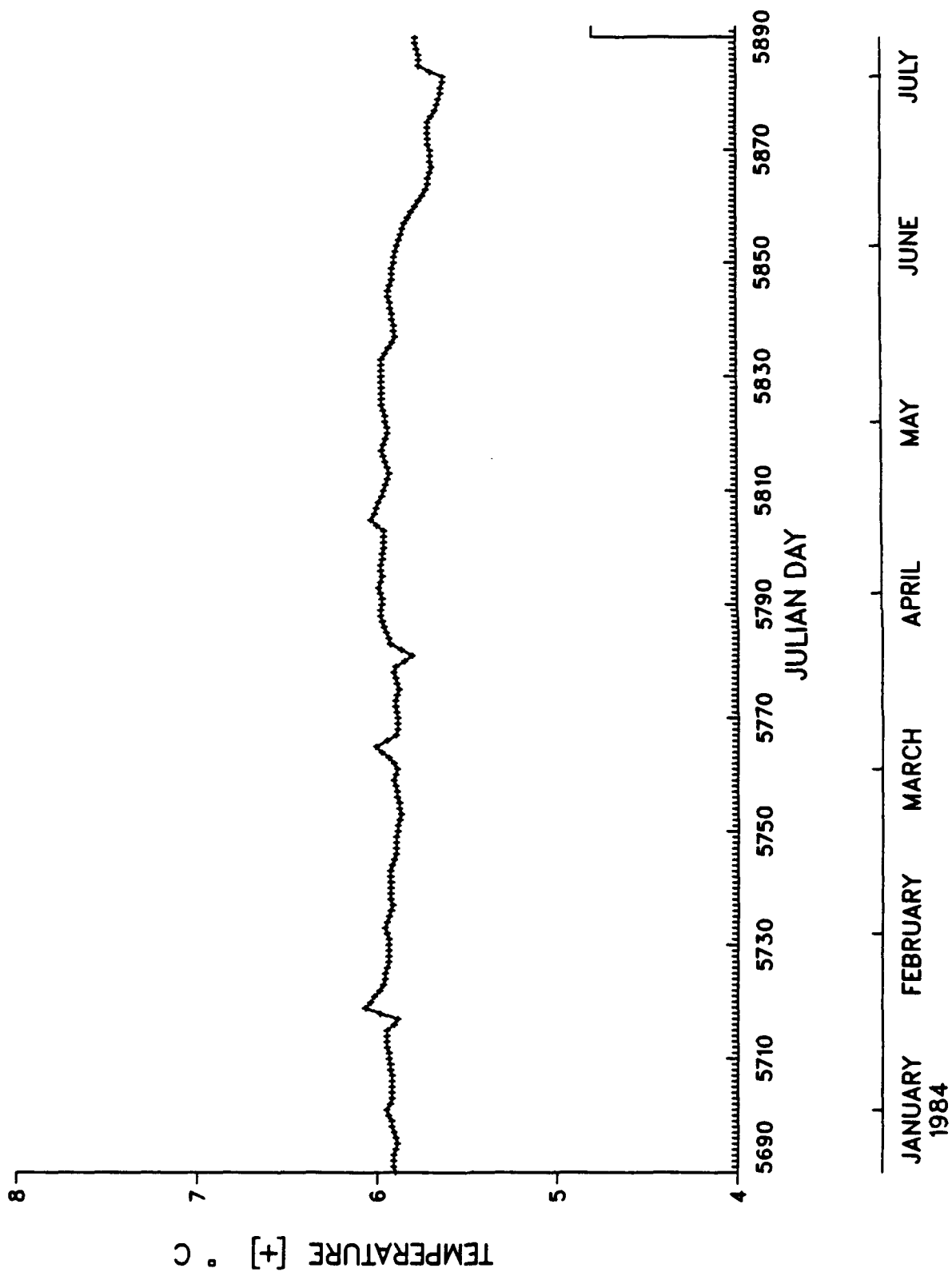
SEPTEMBER

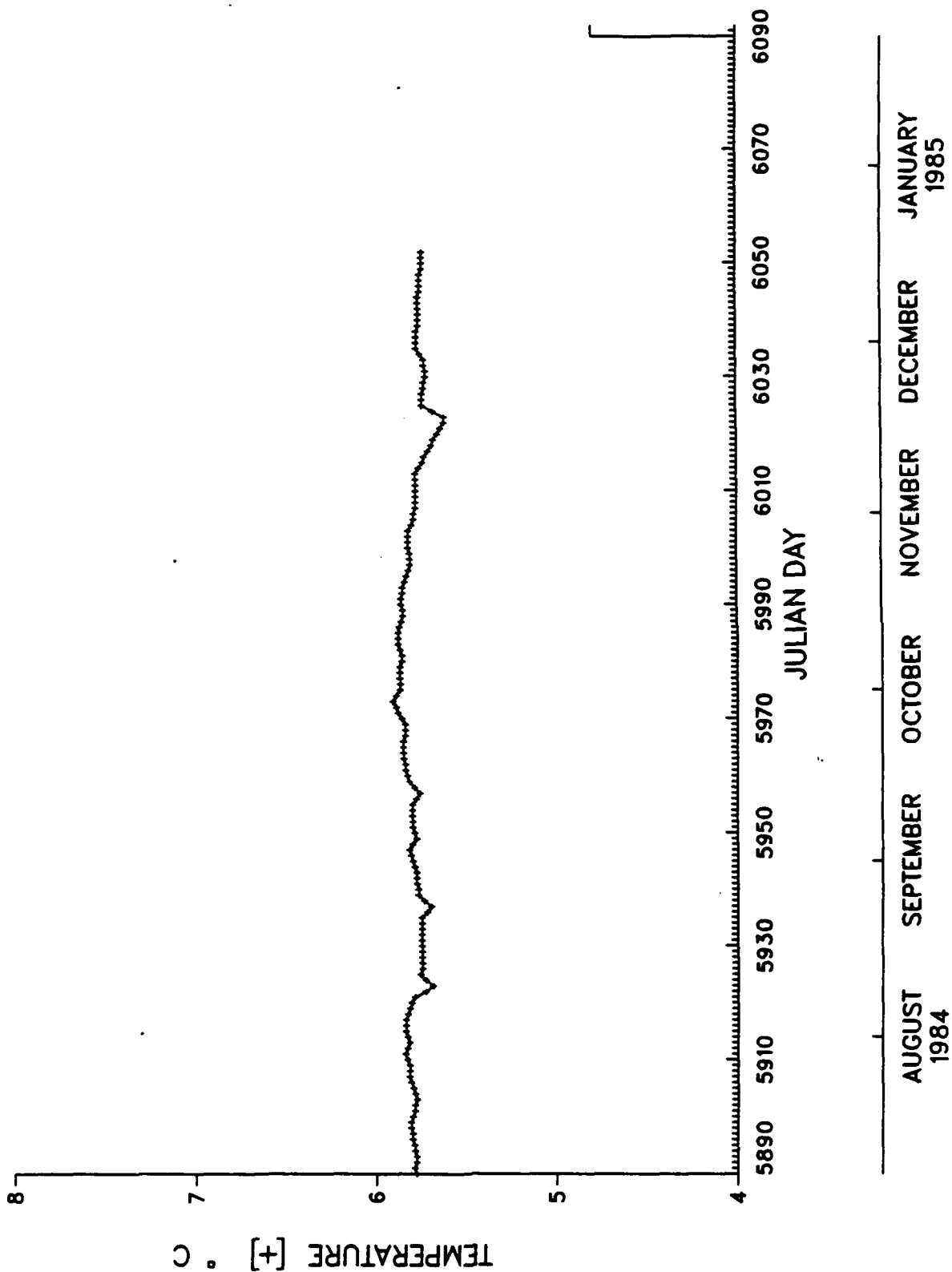
OCTOBER

NOVEMBER

DECEMBER

PRE LDE 12G





APPENDIX B: Publications Using GUSREX Float Data

- Owens, W. B., 1984. A synoptic and statistical description of the Gulf Stream and subtropical gyre using SOFAR floats. *Journal of Physical Oceanography*, 14, 104-113.
- Owens, W. B., P. L. Richardson, W. J. Schmitz, Jr., H. T. Rossby, and D. C. Webb, 1988. Nine-year trajectory of a SOFAR float in the southwestern North Atlantic. *Deep-Sea Research*, 35, 1851-1857.
- Price, J. F., 1985. Particle dispersion in the western North Atlantic. Unpublished manuscript.
- Price, J. F., and H. T. Rossby, 1982. Observations of a barotropic planetary wave in the western North Atlantic. *Journal of Marine Research*, 40(Suppl.), 543-558.
- Richardson, P. L., 1983. A vertical section of eddy kinetic energy through the Gulf Stream system. *Journal of Geophysical Research*, 88, 2705-2709.
- Richardson, P. L., 1985. Average velocity and transport of the Gulf Stream near 55°W. *Journal of Marine Research*, 43, 83-111.
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APPENDIX C: Calendar Conversion Tables — 1981 to 1986

These tables give the year-day and truncated Julian day for each calendar date for the years 1981 through 1986. The truncated Julian days range from 4606 to 6796. To convert to true Julian day, add 2440000.5 to these numbers.

1981

JAN

FEB

MAR

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3	1	2	3	4	5	6	7
				1	2	3	32	33	34	35	36	37	38
				4606	4607	4608	4637	4638	4639	4640	4641	4642	4643
4	5	6	7	8	9	10	8	9	10	11	12	13	14
4	5	6	7	8	9	10	39	40	41	42	43	44	45
4609	4610	4611	4612	4613	4614	4615	4644	4645	4646	4647	4648	4649	4650
11	12	13	14	15	16	17	15	16	17	18	19	20	21
11	12	13	14	15	16	17	46	47	48	49	50	51	52
4616	4617	4618	4619	4620	4621	4622	4651	4652	4653	4654	4655	4656	4657
18	19	20	21	22	23	24	22	23	24	25	26	27	28
18	19	20	21	22	23	24	53	54	55	56	57	58	59
4623	4624	4625	4626	4627	4628	4629	4658	4659	4660	4661	4662	4663	4664
25	26	27	28	29	30	31							
25	26	27	28	29	30	31	29	30	31				
4630	4631	4632	4633	4634	4635	4636	4693	4694	4695				

APR

MAY

JUN

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4							
			91	92	93	94							
			4696	4697	4698	4699							
5	6	7	8	9	10	11	3	4	5	6	7	8	9
95	96	97	98	99	100	101	123	124	125	126	127	128	129
4700	4701	4702	4703	4704	4705	4706	4728	4729	4730	4731	4732	4733	4734
12	13	14	15	16	17	18	10	11	12	13	14	15	16
102	103	104	105	106	107	108	130	131	132	133	134	135	136
4707	4708	4709	4710	4711	4712	4713	4735	4736	4737	4738	4739	4740	4741
19	20	21	22	23	24	25	17	18	19	20	21	22	23
109	110	111	112	113	114	115	137	138	139	140	141	142	143
4714	4715	4716	4717	4718	4719	4720	4742	4743	4744	4745	4746	4747	4748
26	27	28	29	30			24	25	26	27	28	29	30
116	117	118	119	120			144	145	146	147	148	149	150
4721	4722	4723	4724	4725			4749	4750	4751	4752	4753	4754	4755
							31						
							151						
							4756						

JUL							AUG							SEP						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4							1			1	2	3	4	5
			182	183	184	185							213			244	245	246	247	248
			4787	4788	4789	4790							4818			4849	4850	4851	4852	4853
5	6	7	8	9	10	11	2	3	4	5	6	7	8	6	7	8	9	10	11	12
186	187	188	189	190	191	192	214	215	216	217	218	219	220	249	250	251	252	253	254	255
4791	4792	4793	4794	4795	4796	4797	4819	4820	4821	4822	4823	4824	4825	4854	4855	4856	4857	4858	4859	4860
12	13	14	15	16	17	18	9	10	11	12	13	14	15	13	14	15	16	17	18	19
193	194	195	196	197	198	199	221	222	223	224	225	226	227	256	257	258	259	260	261	262
4798	4799	4800	4801	4802	4803	4804	4826	4827	4828	4829	4830	4831	4832	4861	4862	4863	4864	4865	4866	4867
19	20	21	22	23	24	25	16	17	18	19	20	21	22	20	21	22	23	24	25	26
206	207	208	209	210	211	212	228	229	230	231	232	233	234	263	264	265	266	267	268	269
4805	4806	4807	4808	4809	4810	4811	4833	4834	4835	4836	4837	4838	4839	4868	4869	4870	4871	4872	4873	4874
26	27	28	29	30	31		23	24	25	26	27	28	29	27	28	29	30			
207	208	209	210	211	212		235	236	237	238	239	240	241	270	271	272	273			
4812	4813	4814	4815	4816	4817		4840	4841	4842	4843	4844	4845	4846	4875	4876	4877	4878			
							30	31												
							242	243												
							4847	4848												

OCT							NOV							DEC						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3	1	2	3	4	5	6	7			1	2	3	4	5
				274	275	276	305	306	307	308	309	310	311			335	336	337	338	339
				4879	4880	4881	4910	4911	4912	4913	4914	4915	4916			4940	4941	4942	4943	4944
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
277	278	279	280	281	282	283	312	313	314	315	316	317	318	340	341	342	343	344	345	346
4882	4883	4884	4885	4886	4887	4888	4917	4918	4919	4920	4921	4922	4923	4945	4946	4947	4948	4949	4950	4951
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19
284	285	286	287	288	289	290	319	320	321	322	323	324	325	347	348	349	350	351	352	353
4889	4890	4891	4892	4893	4894	4895	4924	4925	4926	4927	4928	4929	4930	4952	4953	4954	4955	4956	4957	4958
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
291	292	293	294	295	296	297	326	327	328	329	330	331	332	354	355	356	357	358	359	360
4896	4897	4898	4899	4900	4901	4902	4931	4932	4933	4934	4935	4936	4937	4959	4960	4961	4962	4963	4964	4965
25	26	27	28	29	30	31	29	30						27	28	29	30	31		
298	299	300	301	302	303	304	333	334						361	362	363	364	365		
4903	4904	4905	4906	4907	4908	4909	4938	4939						4966	4967	4968	4969	4970		

MAR

[illegible][illegible]

SEP

AUG

JUL

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
4 185 5155	5 186 5156	6 187 5157	7 188 5158	8 189 5159	9 190 5160	10 191 5161	1 213 5183	2 214 5184	3 215 5185	4 216 5186	5 217 5187	6 218 5188	7 219 5189	5 248 5218	6 249 5219	7 250 5220	8 251 5221	9 252 5222	10 253 5223	11 254 5224
11 192 5162	12 193 5163	13 194 5164	14 195 5165	15 196 5166	16 197 5167	17 198 5168	15 227 5197	16 228 5198	17 229 5199	18 230 5200	19 231 5201	20 232 5202	21 233 5203	12 255 5225	13 256 5226	14 257 5227	15 258 5228	16 259 5229	17 260 5230	18 261 5231
18 199 5169	19 200 5170	20 201 5171	21 202 5172	22 203 5173	23 204 5174	24 205 5175	22 234 5204	23 235 5205	24 236 5206	25 237 5207	26 238 5208	27 239 5209	28 240 5210	19 262 5232	20 263 5233	21 264 5234	22 265 5235	23 266 5236	24 267 5237	25 268 5238
25 206 5176	26 207 5177	27 208 5178	28 209 5179	29 210 5180	30 211 5181	31 212 5182	29 241 5211	30 242 5212	31 243 5213					26 269 5239	27 270 5240	28 271 5241	29 272 5242	30 273 5243		

DEC

NOV

OCT

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
3 276 5246	4 277 5247	5 278 5248	6 279 5249	7 280 5250	8 281 5251	9 282 5252	7 311 5281	8 312 5282	9 313 5283	10 314 5284	11 315 5285	12 316 5286	13 317 5287	5 339 5309	6 340 5310	7 341 5311	8 342 5312	9 343 5313	10 344 5314	11 345 5315
10 283 5253	11 284 5254	12 285 5255	13 286 5256	14 287 5257	15 288 5258	16 289 5259	14 318 5288	15 319 5289	16 320 5290	17 321 5291	18 322 5292	19 323 5293	20 324 5294	12 346 5316	13 347 5317	14 348 5318	15 349 5319	16 350 5320	17 351 5321	18 352 5322
17 290 5260	18 291 5261	19 292 5262	20 293 5263	21 294 5264	22 295 5265	23 296 5266	21 325 5295	22 326 5296	23 327 5297	24 328 5298	25 329 5299	26 330 5300	27 331 5301	19 353 5323	20 354 5324	21 355 5325	22 356 5326	23 357 5327	24 358 5328	25 359 5329
24 297 5267	25 298 5268	26 299 5269	27 300 5270	28 301 5271	29 302 5272	30 303 5273	28 332 5302	29 333 5303	30 334 5304					26 360 5330	27 361 5331	28 362 5332	29 363 5333	30 364 5334	31 365 5335	

1983

JAN

FEB

MAR

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
2	3	4	5	6	7	8	6	7	8	9	10	11	12	6	7	8	9	10	11	12
2	3	4	5	6	7	8	37	38	39	40	41	42	43	65	66	67	68	69	70	71
5337	5338	5339	5340	5341	5342	5343	5372	5373	5374	5375	5376	5377	5378	5400	5401	5402	5403	5404	5405	5406
9	10	11	12	13	14	15	13	14	15	16	17	18	19	13	14	15	16	17	18	19
9	10	11	12	13	14	15	44	45	46	47	48	49	50	72	73	74	75	76	77	78
5344	5345	5346	5347	5348	5349	5350	5379	5380	5381	5382	5383	5384	5385	5407	5408	5409	5410	5411	5412	5413
16	17	18	19	20	21	22	20	21	22	23	24	25	26	20	21	22	23	24	25	26
16	17	18	19	20	21	22	51	52	53	54	55	56	57	79	80	81	82	83	84	85
5351	5352	5353	5354	5355	5356	5357	5386	5387	5388	5389	5390	5391	5392	5414	5415	5416	5417	5418	5419	5420
23	24	25	26	27	28	29	27	28	29					27	28	29	30	31		
23	24	25	26	27	28	29	58	59						86	87	88	89	90		
5358	5359	5360	5361	5362	5363	5364	5393	5394						5421	5422	5423	5424	5425		

309
30
31
5365 5366

APR

MAY

JUN

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
93	94	95	96	97	98	99	128	129	130	131	132	133	134	158	157	158	159	160	161	162
5428	5429	5430	5431	5432	5433	5434	5463	5464	5465	5466	5467	5468	5469	5491	5492	5493	5494	5495	5496	5497
10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
100	101	102	103	104	105	106	135	136	137	138	139	140	141	163	164	165	166	167	168	169
5435	5436	5437	5438	5439	5440	5441	5470	5471	5472	5473	5474	5475	5476	5498	5499	5500	5501	5502	5503	5504
17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
107	108	109	110	111	112	113	142	143	144	145	146	147	148	170	171	172	173	174	175	176
5442	5443	5444	5445	5446	5447	5448	5477	5478	5479	5480	5481	5482	5483	5505	5506	5507	5508	5509	5510	5511
24	25	26	27	28	29	30	29	30	31					26	27	28	29	30		
114	115	116	117	118	119	120	149	150	151					177	178	179	180	181		
5449	5450	5451	5452	5453	5454	5455	5484	5485	5486					5512	5513	5514	5515	5516		

1984

JAN							FEB							MAR						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
1 5701	2 5702	3 5703	4 5704	5 5705	6 5706	7 5707	5 5708	6 5709	7 5710	8 5711	9 5712	10 5713	11 5714	12 5715	13 5716	14 5717	15 5718	16 5719	17 5720	18 5721
15 5715	16 5716	17 5717	18 5718	19 5719	20 5720	21 5721	19 5722	20 5723	21 5724	22 5725	23 5726	24 5727	25 5728	26 5729	27 5730	28 5731	29 5732	30 5733	31 5734	1 5735
1 5736	2 5737	3 5738	4 5739	5 5740	6 5741	7 5742	4 5743	5 5744	6 5745	7 5746	8 5747	9 5748	10 5749	11 5750	12 5751	13 5752	14 5753	15 5754	16 5755	17 5756
15 5757	16 5758	17 5759	18 5760	19 5761	20 5762	21 5763	19 5764	20 5765	21 5766	22 5767	23 5768	24 5769	25 5770	26 5771	27 5772	28 5773	29 5774	30 5775	31 5776	1 5777
1 5778	2 5779	3 5780	4 5781	5 5782	6 5783	7 5784	4 5785	5 5786	6 5787	7 5788	8 5789	9 5790	10 5791	11 5792	12 5793	13 5794	14 5795	15 5796	16 5797	17 5798
15 5799	16 5800	17 5801	18 5802	19 5803	20 5804	21 5805	19 5806	20 5807	21 5808	22 5809	23 5810	24 5811	25 5812	26 5813	27 5814	28 5815	29 5816	30 5817	31 5818	1 5819
1 5820	2 5821	3 5822	4 5823	5 5824	6 5825	7 5826	4 5827	5 5828	6 5829	7 5830	8 5831	9 5832	10 5833	11 5834	12 5835	13 5836	14 5837	15 5838	16 5839	17 5840
15 5841	16 5842	17 5843	18 5844	19 5845	20 5846	21 5847	19 5848	20 5849	21 5850	22 5851	23 5852	24 5853	25 5854	26 5855	27 5856	28 5857	29 5858	30 5859	31 5860	1 5861
1 5862	2 5863	3 5864	4 5865	5 5866	6 5867	7 5868	4 5869	5 5870	6 5871	7 5872	8 5873	9 5874	10 5875	11 5876	12 5877	13 5878	14 5879	15 5880	16 5881	17 5882
15 5883	16 5884	17 5885	18 5886	19 5887	20 5888	21 5889	19 5890	20 5891	21 5892	22 5893	23 5894	24 5895	25 5896	26 5897	27 5898	28 5899	29 5900	30 5901	31 5902	1 5903
1 5904	2 5905	3 5906	4 5907	5 5908	6 5909	7 5910	4 5911	5 5912	6 5913	7 5914	8 5915	9 5916	10 5917	11 5918	12 5919	13 5920	14 5921	15 5922	16 5923	17 5924
15 5925	16 5926	17 5927	18 5928	19 5929	20 5930	21 5931	19 5932	20 5933	21 5934	22 5935	23 5936	24 5937	25 5938	26 5939	27 5940	28 5941	29 5942	30 5943	31 5944	1 5945
1 5946	2 5947	3 5948	4 5949	5 5950	6 5951	7 5952	4 5953	5 5954	6 5955	7 5956	8 5957	9 5958	10 5959	11 5960	12 5961	13 5962	14 5963	15 5964	16 5965	17 5966
15 5967	16 5968	17 5969	18 5970	19 5971	20 5972	21 5973	19 5974	20 5975	21 5976	22 5977	23 5978	24 5979	25 5980	26 5981	27 5982	28 5983	29 5984	30 5985	31 5986	1 5987
1 5988	2 5989	3 5990	4 5991	5 5992	6 5993	7 5994	4 5995	5 5996	6 5997	7 5998	8 5999	9 6000	10 6001	11 6002	12 6003	13 6004	14 6005	15 6006	16 6007	17 6008
15 6009	16 6010	17 6011	18 6012	19 6013	20 6014	21 6015	19 6016	20 6017	21 6018	22 6019	23 6020	24 6021	25 6022	26 6023	27 6024	28 6025	29 6026	30 6027	31 6028	1 6029
1 6030	2 6031	3 6032	4 6033	5 6034	6 6035	7 6036	4 6037	5 6038	6 6039	7 6040	8 6041	9 6042	10 6043	11 6044	12 6045	13 6046	14 6047	15 6048	16 6049	17 6050
15 6051	16 6052	17 6053	18 6054	19 6055	20 6056	21 6057	19 6058	20 6059	21 6060	22 6061	23 6062	24 6063	25 6064	26 6065	27 6066	28 6067	29 6068	30 6069	31 6070	1 6071

JUL							AUG							SEP						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
1 183 5883	2 184 5884	3 185 5885	4 186 5886	5 187 5887	6 188 5888	7 189 5889	5 218 5918	6 219 5919	7 220 5920	8 221 5921	9 222 5922	10 223 5923	11 224 5924	2 246 5946	3 247 5947	4 248 5948	5 249 5949	6 250 5950	7 251 5951	1 245 5945
8 190 5890	9 191 5891	10 192 5892	11 193 5893	12 194 5894	13 195 5895	14 196 5896	12 225 5925	13 226 5926	14 227 5927	15 228 5928	16 229 5929	17 230 5930	18 231 5931	9 253 5953	10 254 5954	11 255 5955	12 256 5956	13 257 5957	14 258 5958	8 252 5952
15 197 5897	16 198 5898	17 199 5899	18 200 5900	19 201 5901	20 202 5902	21 203 5903	19 232 5932	20 233 5933	21 234 5934	22 235 5935	23 236 5936	24 237 5937	25 238 5938	16 260 5960	17 261 5961	18 262 5962	19 263 5963	20 264 5964	21 265 5965	15 259 5959
22 204 5904	23 205 5905	24 206 5906	25 207 5907	26 208 5908	27 209 5909	28 210 5910	26 239 5939	27 240 5940	28 241 5941	29 242 5942	30 243 5943	31 244 5944		23 267 5967	24 268 5968	25 269 5969	26 270 5970	27 271 5971	28 272 5972	29 273 5973
29 211 5911	30 212 5912	31 213 5913												30 274 5974						

312

OCT							NOV							DEC						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
7 281 5981	8 282 5982	9 283 5983	10 284 5984	11 285 5985	12 286 5986	13 287 5987	4 309 6009	5 310 6010	6 311 6011	7 312 6012	8 313 6013	9 314 6014	10 315 6015	2 337 6037	3 338 6038	4 339 6039	5 340 6040	6 341 6041	7 342 6042	1 336 6036
14 288 5988	15 289 5989	16 290 5990	17 291 5991	18 292 5992	19 293 5993	20 294 5994	11 316 6016	12 317 6017	13 318 6018	14 319 6019	15 320 6020	16 321 6021	17 322 6022	9 344 6044	10 345 6045	11 346 6046	12 347 6047	13 348 6048	14 349 6049	15 350 6050
21 295 5995	22 296 5996	23 297 5997	24 298 5998	25 299 5999	26 300 6000	27 301 6001	18 323 6023	19 324 6024	20 325 6025	21 326 6026	22 327 6027	23 328 6028	24 329 6029	16 351 6051	17 352 6052	18 353 6053	19 354 6054	20 355 6055	21 356 6056	22 357 6057
28 302 6002	29 303 6003	30 304 6004	31 305 6005				25 330 6030	26 331 6031	27 332 6032	28 333 6033	29 334 6034	30 335 6035		23 358 6058	24 359 6059	25 360 6060	26 361 6061	27 362 6062	28 363 6063	29 364 6064
														30 365 6065	31 366 6066					

1985

JAN							FEB							MAR						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5						1	2						1	2
		1	2	3	4	5						32	33						60	61
		6067	6068	6069	6070	6071						6098	6099						6126	6127
6	7	8	9	10	11	12	3	4	5	6	7	8	9	3	4	5	6	7	8	9
6072	6073	6074	6075	6076	6077	6078	34	35	36	37	38	39	40	62	63	64	65	66	67	68
							6100	6101	6102	6103	6104	6105	6106	6128	6129	6130	6131	6132	6133	6134
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16
13	14	15	16	17	18	19	41	42	43	44	45	46	47	69	70	71	72	73	74	75
6079	6080	6081	6082	6083	6084	6085	6107	6108	6109	6110	6111	6112	6113	6135	6136	6137	6138	6139	6140	6141
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23
20	21	22	23	24	25	26	48	49	50	51	52	53	54	76	77	78	79	80	81	82
6086	6087	6088	6089	6090	6091	6092	6114	6115	6116	6117	6118	6119	6120	6142	6143	6144	6145	6146	6147	6148
27	28	29	30	31			24	25	26	27	28	29		24	25	26	27	28	29	30
27	28	29	30	31			55	56	57	58	59	60		83	84	85	86	87	88	89
6093	6094	6095	6096	6097			6121	6122	6123	6124	6125	6126		6149	6150	6151	6152	6153	6154	6155
														31						
														90						
														6156						

APR							MAY							JUN						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5														
		91	92	93	94	95														
		6157	6158	6159	6160	6161														
7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
97	98	99	100	101	102	103	125	126	127	128	129	130	131	153	154	155	156	157	158	159
6163	6164	6165	6166	6167	6168	6169	6191	6192	6193	6194	6195	6196	6197	6219	6220	6221	6222	6223	6224	6225
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
104	105	106	107	108	109	110	132	133	134	135	136	137	138	160	161	162	163	164	165	166
6170	6171	6172	6173	6174	6175	6176	6198	6199	6200	6201	6202	6203	6204	6226	6227	6228	6229	6230	6231	6232
21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
111	112	113	114	115	116	117	139	140	141	142	143	144	145	167	168	169	170	171	172	173
6177	6178	6179	6180	6181	6182	6183	6205	6206	6207	6208	6209	6210	6211	6233	6234	6235	6236	6237	6238	6239
28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29
118	119	120					146	147	148	149	150	151		174	175	176	177	178	179	180
6184	6185	6186					6212	6213	6214	6215	6216	6217		6240	6241	6242	6243	6244	6245	6246
														30						
														181						
														6247						

JUL							AUG							SEP						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6					1	2	3	1	2	3	4	5	6	7
	182	183	184	185	186	187					213	214	215	244	245	246	247	248	249	250
	6248	6249	6250	6251	6252	6253					6279	6280	6281	6310	6311	6312	6313	6314	6315	6316
7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14
188	189	190	191	192	193	194	216	217	218	219	220	221	222	251	252	253	254	255	256	257
6254	6255	6256	6257	6258	6259	6260	6282	6283	6284	6285	6286	6287	6288	6317	6318	6319	6320	6321	6322	6323
14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21
195	196	197	198	199	200	201	223	224	225	226	227	228	229	258	259	260	261	262	263	264
6261	6262	6263	6264	6265	6266	6267	6289	6290	6291	6292	6293	6294	6295	6324	6325	6326	6327	6328	6329	6330
21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28
202	203	204	205	206	207	208	230	231	232	233	234	235	236	265	266	267	268	269	270	271
6268	6269	6270	6271	6272	6273	6274	6296	6297	6298	6299	6300	6301	6302	6331	6332	6333	6334	6335	6336	6337
28	29	30	31				25	26	27	28	29	30	31	29	30					
209	210	211	212				237	238	239	240	241	242	243	272	273					
6275	6276	6277	6278				6303	6304	6305	6306	6307	6308	6309	6338	6339					

OCT							NOV							DEC						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5						1	2	1	2	3	4	5	6	7
		274	275	276	277	278						305	306	335	336	337	338	339	340	341
		6340	6341	6342	6343	6344						6371	6372	6401	6402	6403	6404	6405	6406	6407
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
279	280	281	282	283	284	285	307	308	309	310	311	312	313	342	343	344	345	346	347	348
6345	6346	6347	6348	6349	6350	6351	6373	6374	6375	6376	6377	6378	6379	6408	6409	6410	6411	6412	6413	6414
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
286	287	288	289	290	291	292	314	315	316	317	318	319	320	349	350	351	352	353	354	355
6352	6353	6354	6355	6356	6357	6358	6380	6381	6382	6383	6384	6385	6386	6415	6416	6417	6418	6419	6420	6421
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
293	294	295	296	297	298	299	321	322	323	324	325	326	327	356	357	358	359	360	361	362
6359	6360	6361	6362	6363	6364	6365	6387	6388	6389	6390	6391	6392	6393	6422	6423	6424	6425	6426	6427	6428
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				
300	301	302	303	304			328	329	330	331	332	333	334	363	364	365				
6366	6367	6368	6369	6370			6394	6395	6396	6397	6398	6399	6400	6429	6430	6431				

1986

JAN							FEB							MAR						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4							1							1
			1	2	3	4							32							60
			8432	8433	8434	8435							8463							6491
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8
5	6	7	8	9	10	11	33	34	35	36	37	38	39	61	62	63	64	65	66	67
8436	8437	8438	8439	8440	8441	8442	8464	8465	8466	8467	8468	8469	8470	8492	8493	8494	8495	8496	8497	8498
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15
12	13	14	15	16	17	18	40	41	42	43	44	45	46	68	69	70	71	72	73	74
8443	8444	8445	8446	8447	8448	8449	8471	8472	8473	8474	8475	8476	8477	8499	8500	8501	8502	8503	8504	8505
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22
19	20	21	22	23	24	25	47	48	49	50	51	52	53	75	76	77	78	79	80	81
8450	8451	8452	8453	8454	8455	8456	8478	8479	8480	8481	8482	8483	8484	8506	8507	8508	8509	8510	8511	8512
26	27	28	29	30	31		23	24	25	26	27	28	29	23	24	25	26	27	28	29
26	27	28	29	30	31		54	55	56	57	58	59	60	82	83	84	85	86	87	88
8457	8458	8459	8460	8461	8462		8485	8486	8487	8488	8489	8490	8491	8513	8514	8515	8516	8517	8518	8519
														30	31					
														89	90					
														8520	8521					

APR							MAY							JUN						
SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5					1	2	3	1	2	3	4	5	6	7
		91	92	93	94	95					121	122	123	152	153	154	155	156	157	158
		8522	8523	8524	8525	8526					8552	8553	8554	8583	8584	8585	8586	8587	8588	8589
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14
96	97	98	99	100	101	102	124	125	126	127	128	129	130	159	160	161	162	163	164	165
8527	8528	8529	8530	8531	8532	8533	8555	8556	8557	8558	8559	8560	8561	8590	8591	8592	8593	8594	8595	8596
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
103	104	105	106	107	108	109	131	132	133	134	135	136	137	166	167	168	169	170	171	172
8534	8535	8536	8537	8538	8539	8540	8562	8563	8564	8565	8566	8567	8568	8597	8598	8599	8600	8601	8602	8603
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
110	111	112	113	114	115	116	138	139	140	141	142	143	144	173	174	175	176	177	178	179
8541	8542	8543	8544	8545	8546	8547	8569	8570	8571	8572	8573	8574	8575	8604	8605	8606	8607	8608	8609	8610
27	28	29	30				25	26	27	28	29	30	31	29	30					
117	118	119	120				145	146	147	148	149	150	151	180	181					
8546	8549	8550	8551				8576	8577	8578	8579	8580	8581	8582	8611	8612					

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